

3DArtist™

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Practical inspiration for 3D artists

PROFESSIONAL
ZBRUSH
SCULPTS

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detailed work yet

50
MAYA
TIPS &
TRICKS
Enhance your workflow

The future of
animation
The tools of next-gen
animators revealed

CREATE
THE COVER
STEP-BY-STEP
TUTORIAL
INSIDE

Model stunning
environments
Build new worlds with ease





Image courtesy of Rakan Khamash

"MODO is now a great all-round package and offers amazing value for money compared to the competition." - 8/10

Richard Yot, 3D Artist review.



Hasan Bajramovic

3DArtistonline

Username: hbajramovic

Personal portfolio site

www.hbajramovic.cgsociety.org

Location Bosnia and Herzegovina

Software used ZBrush, 3ds Max, V-Ray, Photoshop



We've never been anything less than astonished by the fantastic work by Hasan Bajramovic. That's why we had him create this stunning samurai cover. Turn to page 66 to attempt creating the image yourself.

For more exciting tutorial content turn to page 50 and discover the craft of Assassin's Creed animation from Ubisoft Montreal animation director Jonathan Cooper. Or why not turn to page 24 and learn some useful Maya tips and tricks? It's a bumper issue!

Create this
cutting-edge
samurai
page 66

“I remember browsing the 3D galleries found on the CDs that came with Croatian PC magazines. I always wondered how these stunning images were created and so began my studies. It took a lot of practise to get where I am now and the fight still continues”

Hasan Bajramovic discusses his career over on **page 108**

With the Disc

Free with this issue

• Check out the ZBrush starter pack, filled with helpful assets



Welcome

to the magazine and 116 pages of amazing 3D

Every issue you can count on...

- 1 Exclusively commissioned art
- 2 Behind-the-scenes guides to images and fantastic artwork
- 3 A CD packed full of creative goodness
- 4 Interviews with inspirational artists
- 5 Tips for studying 3D or getting work in the industry
- 6 The chance to see your art in the mag!



Hello and welcome to 3D Artist magazine!

Is there anything cooler than a samurai? We think not, which is why we got in touch with Hasan Bajramovic to create this issue's fantastic cover. Turn

to page 66 to discover his ZBrush workflow, or, if you're just getting started with the software, pop in the cover disc to explore our helpful starter pack.

This issue we've also delved into the art of videogame animation, talking to industry figureheads about the challenges therein. You can find a tutorial on *Assassin's Creed* MotionBuilder cycles and another on how to use Faceware to create convincing in-game facial animation.

Enjoy the issue!

Chris

This issue's team of expert artists...



Hasan Bajramovic

Cover artist Hasan knows his stuff when it comes to ZBrush. Check out his samurai tutorial for some handy tips and tricks



Solomon W Jagwe

Facial animation can be tough, but systems such as Faceware make the process far simpler, as Solomon reveals on page 58



Jonathan Cooper

Who better to discuss game animation than Ubisoft Montreal's animation director? Turn to p50 for this MotionBuilder tutorial



Dave Scotland

Dave details the steps required to create graffiti art in 3ds Max. Take a look at the cover disc for his accompanying video



Jon Denton

Jon explores the challenges and complexities of next-gen videogame animation with his in-depth feature



David Scarborough

If you watched this year's E3, you likely saw the work of Digic Pictures. David talks to the studio and charts its rise to fame



Jahirul Amin

Jahirul's kicking off a new Maya series this issue, this time focusing on the creation of a quaint European town



Filipe Magalhães

Filipe explores the new features of ZBrush 4R6, one of the most exciting updates to Pixologic's software yet



Gustavo Ahlén

Turn to page 86 to wrap up Gustavo's anatomy sculpting series. Here he discusses form, shape and scale



Eugenio Garcia

Eugenio dives into texturing, shading and light for this LightWave tutorial. Turn to page 88 to learn all about it



Pierre Rogers

3D-Coat is quickly becoming one of the industry's premier retopology tools. Turn to page 90 to discover its various uses



Simon Fenton

Escape Studios tutor Simon puts his 13 years of experience to use, reviewing digital sculpting toolkit Mudbox 2014

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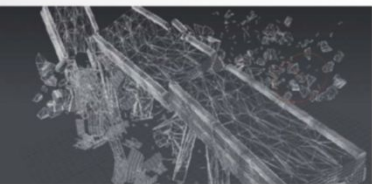
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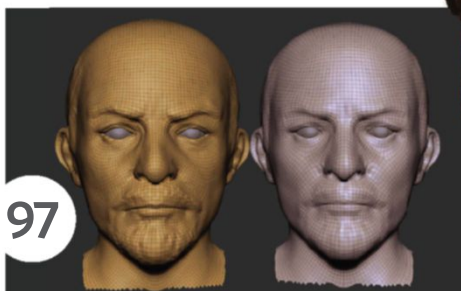
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Moving pixels

“Every new game is breaking new ground in storytelling, so it's a very exciting time for animators to be in this industry”

Jonathan Cooper, Ubisoft's animation director discusses his craft Page 42

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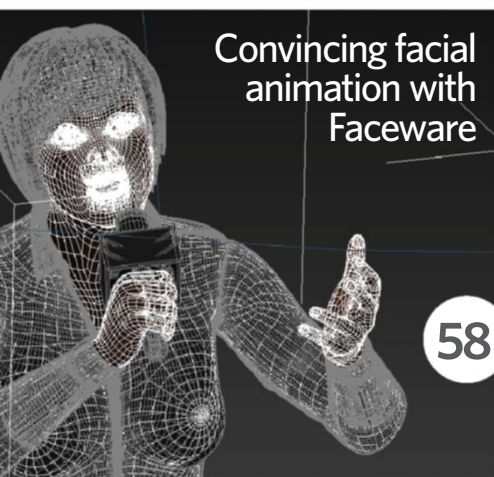
Create our
awesome
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image



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Discover 50 tips
and tricks in Maya



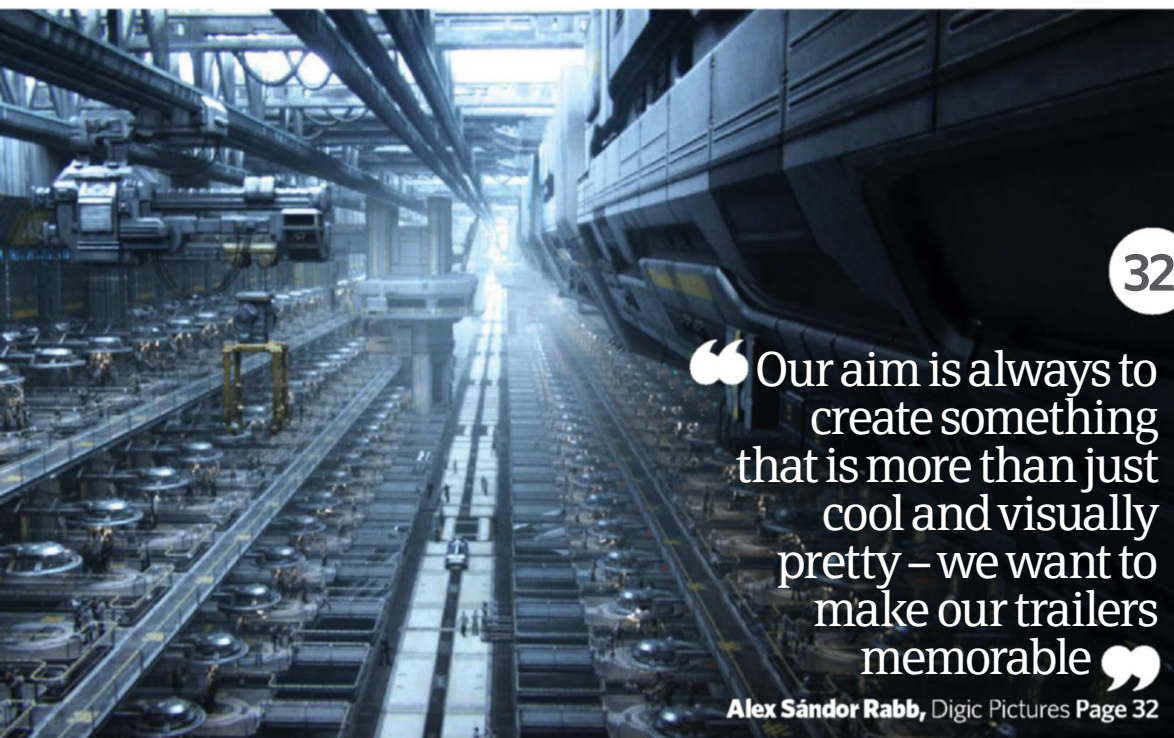
Convincing facial
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 Faceware

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Master Assassin's
 Creed blend cycles

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“Our aim is always to
 create something
 that is more than just
 cool and visually
 pretty – we want to
 make our trailers
 memorable”

Alex Sándor Rabb, DigiC Pictures Page 32

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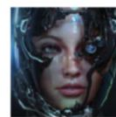
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LightWave: Shading

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With the Disc

- ZBrush starter pack
- Faceware Retargeter
- UMOLAB and Video Copilot models
- Digital-Tutors training

Turn to page 112 for
 the complete list of
 the disc's contents

WELCOME TO THE GALLERY

Seven pages of great artwork from the 3D community

Images we love!

Artist info



Henning Sanden

3DArtistonline

Username: henningsanden

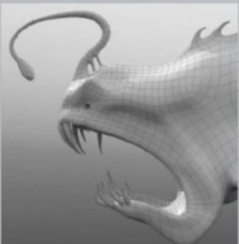
Personal portfolio site

www.henningsanden.com

Country Denmark

Software used MODO, ZBrush,
Mudbox, Photoshop

Work in progress...



“Henning is a truly inspiring character artist. His creative skill is capable of turning even the



ocean's deepest creatures into fun personalities”

Chris Deputy Editor

“I've always been fascinated by the ocean, particularly in the deep. For a long time I've wanted to do something like this and I'm happy I finally got around to it. I will definitely make more ocean-based creatures in the future”

Henning Sanden, *Lurking in the Deep*, 2013

Have an image you feel passionate about? Get your artwork featured in these pages
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Artist info



Andrey Bobir

Based in Kazakhstan, Andrey does compositing work on various cartoon 3D projects

Personal portfolio site

www.andreybobir.deviantart.com

Country Kazakhstan

Software used

3ds Max, Photoshop

Work in progress...



“ We love seeing artists use 3D to create abstract images like this. It's proof that CG imagery is more than about being entertaining or exciting...”



Chris Deputy Editor

“ This piece is about a man meditating on the meaning of life who opens the door of consciousness... He realises that the only meaning of his life is making himself happy – to open another door...”

Andrey Bobir, *Door Of Consciousness*, 2009



“I love the intriguing composition of this image. The low-angle view of the character and the fact that her hands are cropped out draw attention to the expression on her face”



Larissa Staff Writer

“I wanted to guide the eye to the expression of uncertainty and doubt on her face. I went for something rather unusual by deciding to crop out the hands and spears”

Pablo Muñoz Gómez, *Unfathomable*, 2013

Artist info



Pablo Muñoz Gómez

3DArtistonline

Username: Pablancer

Personal portfolio site
www.pablancer.com

Country Australia

Software used
ZBrush, Photoshop

Work in progress...



“This promotional image features my original characters Penny and Candy. They’re not the pin-ups in the title, but the book they’re holding is a real one I’ve recently released called *Polygon Pin-ups*”

Andrew Hickinbottom, *Polygon Pin-ups*, 2013



“Andrew’s characters are always distinctive. The extreme facial expressions, poses and colour palettes used have resulted in two funny and very relatable characters”



Larissa Staff Writer

Artist info



Andrew Hickinbottom

Andrew is a designer and modeller specialising in stylised characters, particularly pin-ups

Personal portfolio site
www.andrewhickinbottom.com

Country UK

Software used
3ds Max, V-Ray, Photoshop

Work in progress...



Artist info



Jonas Bergholm

3DArtistOnline

Username: blush

Personal portfolio site
www.jonasbergholm.se

Country Sweden

Software used Maya, V-Ray,
Photoshop, NUKE

Work in progress...



“The use of lighting through the blinds describes the cluttered atmosphere beautifully and brings the creative potential of a tool shed to life”



Larissa Staff Writer

“This piece was my individual school project where I set out with the goal of learning more about shading, lighting and rendering with V-Ray during my first year. I get inspired by seeing other people’s wonderful digital creations, which makes me strive to one day reach the same level as them”

Jonas Bergholm, *Tool Shed*, 2013

THE GALLERY

“Anthony is a real inspiration; while travelling the world creating high-end CG, he has managed to make an impressive portfolio. This scene



makes me want to discover the story behind it!”

Larissa Staff Writer

Artist info



Anthony Guebels

Originally from Belgium, Anthony now works as a CG artist for Ubisoft Montreal

Personal portfolio site
www.deadeyesquirrel.cghub.com

Country Canada

Software used 3ds Max, ZBrush, V-Ray, Photoshop

Work in progress...



“I started to work on a similar concept a few years ago, then saved my files in my WIP folder and almost forgot about it. I've recently had chance to work on personal artworks, so decided to improve and finish this. My main software is 3ds Max, with a little bit of ZBrush for detailing and model improvement”

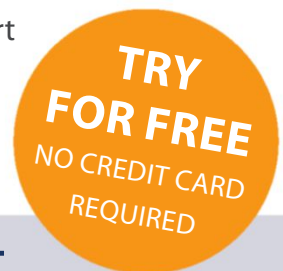
Anthony Guebels, *neoV*, 2013

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An example of CtrlZ's past work at Bournemouth University. Team CtrlZ will be using Houdini, RealFlow, NUKE and will render in Maya using V-Ray to complete their sequence for the competition



Description

At the heart of Bournemouth's upcoming BFX Festival is a six-week competition for student teams around the UK, where the best individuals will walk away with internships to leading studios. The competition is followed by a larger festival in September. This will include public film screenings, in-depth workshops, a careers hub and the awards ceremony itself.

Country UK

Industry Partners

Double Negative, MPC, Cinesite, Framestore, Hibbert Ralph Animation, The Mill, British Academy of Film and Television Arts, Realise Studio and Shotgun Software

Industry Mentors

Professionals from MPC, The Mill, Cinesite, Double Negative and Framestore

The passages used as a guide for each projects:

The Water-Babies by Charles Kingsley

Odyssey (Cyclops) by Homer (translated and abridged by Charles Lamb)

The Machine Stops by E.M. Forster

The Time Machine by H.G. Wells

Alice's Adventures in Wonderland by Lewis Carroll

COMPETITION FINALIST TEAMS

Blonde Rangers Artur Zima, Jerry Lee, Michał Adam Rutkowski, Dominika Brodowska, Rami Al-Ashqar, Sarah Abdul Ghani Ismail

CtrlZ Ross Hildick, Lisa Huxstep, Ryan Nicholas, Leonardo Cavaletti, Adam Lowe, Jack Bazilevsky

CG Cyber Monks Abel Sardido Reyes, Barbara Dobosova, Carlos Pfister, Edward Ferrysienanda, Raphael Jauslin

Kuklops Blánaid Montague, Amber Ryan, James Hansell, Adam Spring, Steve Weeks, James Russell

Level 2 Rebecca Meilak, Matthew Margerison, Alistair Chowdhury, Edgar Fernandes Jardim, Ashley Gin-Sing

Team Maos Daniel Jack, Felix Bauer-Schlichtegroll, Gordon Marshall, Nikolay Zorov, Mohrag Taylor, Tomasz Kamil Czapski

Team Poseidon Rob Stratton, Wojtek Zankowski, Simone Giampaolo, Henrik Linnes, Alexandra Birchmore, Tuomo Rinne

Team Wizard David Sadler-Coppard, Billy Mpetha, Chavdar Yordanov, Daniel James

Traditionally Digital Nicholas Mallinder, Suvi Jokiniemi, Graham Goldsworthy, Amy Carpenter, Johan Barrios, Katie Dymmock

Team U.U.L.A Mathew William Dame, Ngou-Yin Wong (Mori), Amy Fairclough, Lucas Clay

BFX begins

We catch up with the finalist teams entering the UK's first Student Visual Effects and Animation Festival in Bournemouth

Having been selected by industry experts from studios such as Framestore, The Mill, Double Negative, MPC and Cinesite earlier this year, the ten finalist student teams competing to win at BFX have finally started work on the sequences that will be pitched against one another during the festival.

The teams, who were given passages from classic literature to use as rough guides to their entries, will not only need to complete a 15- to 30-second sequence in only six weeks, but will also be expected to submit accurate HD breakdowns explaining their production process and be prepared to defend their finished work in front of a panel of mentors and judges.

Teams Maos and CtrlZ are two of the groups producing sequences on their home turf. "As we are all from Bournemouth, the familiarity we have with the building, the systems, the lecturers and the NCCA in general will give us a definite edge," says Adam Lowe, effects TD for the CtrlZ team. For their final sequence, CtrlZ aim to submit a VFX piece about a time traveller using a real-life Ctrl+Z button to undo the negative events in his life, in this case a horrific shooting in a bar. "The audience will get to see him use the device, have time linger in a reverse-bullet-time effect while bullets, glass and blood fly," Lowe describes. Team Maos, who have just finished their second year, selected *Odyssey's* Cyclops passage by Homer as a guide. "We want this



Concept art by Yifan Hu for Poseidon's BFX sequence. The team are aiming to give the Cyclops extract a humorous twist

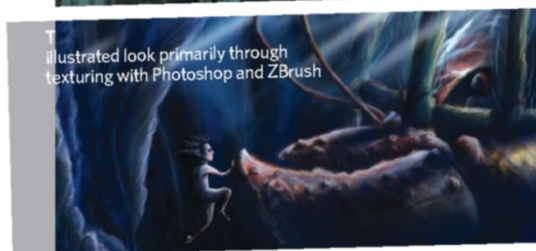


"We're going to be using 3D turnaround environments, lighting effects, 3D camera moves and simulating mirrors," Dame from U.U.L.A explains



This image is from 'Ego', the third-year Major project on which Ryan Nicholas and Ross Hildick from CtrlZ collaborated

The Cyber Monks group will mostly rely on Houdini for their BFX sequence



The illustrated look primarily through texturing with Photoshop and ZBrush



Kuklops' take on Cyclops by Adam Spring. The character has since been redesigned

piece to be about the visuals, as 30 seconds is a short time to try to tell an engaging narrative," explains project leader Daniel Jack. "Our entire idea can be summed up as 'sci-fi Odysseus takes on a raging Cyclops'. We've evolved to work 16 hours a day over our two years as animation students, but the organisers have capped our working hours."

Team Wizard, Traditionally Digital, Kuklops and Poseidon have also chosen to take on the *Odyssey* piece. "We decided we didn't want to approach the passage too literally, instead using it as a basis for an epic, 2D, hand-drawn, animated sequence," says David Sadler-Coppard from Team Wizard. The four students from the University of Portsmouth have decided to create a fully 3D Cyclops character for their 2D fight scene since their pitch. Team Kuklops has taken a very different approach to the interpretation. "We wanted to create a Cyclops that was different from the brute that is normally portrayed in films," team animator James Hansel explains. The group has redesigned their character and created a new storyboard after receiving feedback from BFX industry mentors. They plan to use Maya and NUKE to produce a CG Cyclops character that will interact with a live-action actor.

Representing the University of Glamorgan is the Traditionally Digital team, who will also be working on a CG and live-action sequence. "It's always better to show than tell and having a clear idea of the look we're going for has kept the project on track," says team leader Nick Mallinder. The team formed around Mallinder's concept art and aim to produce a photorealistic sequence involving a Cyclops character that attacks a live-action actor by warping his mind.

Team Poseidon is taking a different approach. "We thought that most of the groups would choose a photorealistic look, so we decided to go in the opposite direction by trying to push our CG characters to a cartoonish extreme," begins Simone Giampaolo, team leader. Inspired by animations such as *Hotel Transylvania* for their project, 'Polyphemus' Feast', Giampaolo reveals that "instead of having a giant Cyclops threatening and devouring the unlucky bunch, our Greek army runs into a tiny, cute baby Cyclops who soon reveals his real nature as an insatiable predator".

Level 2, a team made up of first-year animators from Ravensbourne, chose a passage from *The Water-Babies* by Charles Kingsley and aim to create a more stylised look. "We want to create a short that looks and feels more like an illustration. This will suit the text as it is from a children's story," team leader Rebecca Meilak describes. "The style we're aiming for is a richly textured moving painting, and a simple but immersive atmosphere."

Meanwhile the Cyber Monks team who, like CtrlZ is made up of Bournemouth University students, has also chosen the *Time Machine* passage from H.G. Wells as a guide. "I would say that the original idea gives us the advantage," says Barbara Dobosova, who will be creating the texturing, visual effects, programming and compositing for the project. Their sequence will be an abstract animation featuring a female protagonist who represents an idea going through all the stages of 3D animation-production, from concept to final renders.

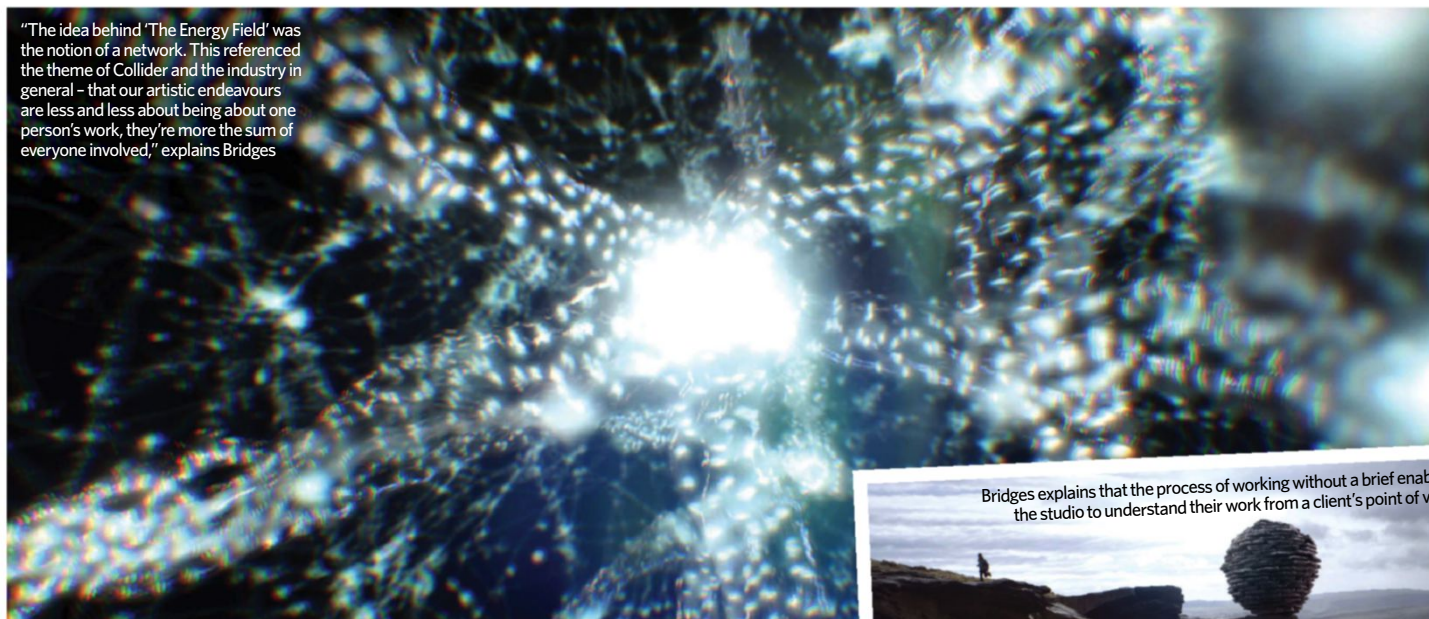
Team U.U.L.A from the University of Lincoln will be interpreting the passage as a narrative based on the concept of aging. "If I had to describe our style I would say it's a 2.5D hybrid with a postproduction twist," describes Mathew Dame, project team leader. "We like to take traditional 2D animation and art, then use After Effects and Maya to push it to the limits of what we can do,"

For The Blonde Rangers, combining 2D and 3D aesthetics is also an aim. The team are creating a modern take on *Alice's Adventures in Wonderland* by Lewis Carroll entitled 'Blonderland', where Alice is a modern teenager recording a Vlog in her bedroom before getting interrupted by the detailed environment slowly turning into a surreal wonderland around her. "I can't wait for more teamwork," says project producer and TD Michał Rutkowski. "I think it's one of the best feelings you can have, living with people who are all fighting for the same artistic goal."

“We’re all incredibly ambitious and hard-working. I know I’m far too competitive but I think you have to be for something like this. I know we have passion behind us

Mathew Dame, leader for Team U.U.L.A

"The idea behind 'The Energy Field' was the notion of a network. This referenced the theme of Collider and the industry in general – that our artistic endeavours are less and less about being about one person's work, they're more the sum of everyone involved," explains Bridges



Bridges explains that the process of working without a brief enabled the studio to understand their work from a client's point of view



The Aftermath

Neon's team explains how they combined live action with CG to create the otherworldly title sequences for the Collider Conference

Neon www.neon.tv

Offered an open brief and the opportunity to work with complete creative control, award-winning London studio Neon jumped on the chance to produce the opening titles for this year's Collider Conference in New York. Despite the challenging time frame, the team could not resist accepting the project. Here we talk to Neon's managing director Tom Bridges and Lead 3D artist James Spillman about how the studio produced the vast otherworldly scenes in the credits.

What was the brief for this project and how did you go about approaching it?

Bridges: Part of the attraction of the project was that there was no brief! It was quite daunting, too. It's not often we get to start with a completely blank piece of paper. The fact that there was next to no budget meant that we had to be creative and make the most of the assets we had to hand.

The time frame was only six weeks from brief to delivery, which didn't allow for much room for error. Shooting live-action enabled us to put a good framework together quite early on. We used that as a base and worked into it with each iteration.

Can you discuss your approach to world-building for the amazing landscapes we see in the credits?

Bridges: It was important that everything felt as though it was part of the same world. We developed lots of other shots that didn't make the final cut, not because they were bad, just because they didn't quite fit.

We did a lot of paint work on some quite simple CG assets to give the illusion of detail. For the fully CG plates, we deliberately restricted the camera movement, trying to keep them as subtle and unobtrusive as possible.

How did Neon create the energy field in Maya and NUKE?

Spillman: We decided we wanted to give a sense of the energy being contained within biological structures, which led on to some interesting challenges.

The energy balls were made using Maya Fluid and were a mix of simulation and texture-animation to get the sense of energy as they moved and eventually collided. We used paintFX for the frame of the energy balls to give them a fluorescent, almost jellyfish-like appearance. In NUKE we then embellished the glows and warmth.

Do you have any tips or advice for composers looking to achieve a similar effect to this?

Bridges: Use bold strokes and keep it simple. Be brutal, don't be afraid to bin work that doesn't fit.

Neon's aim with the project was to play to the studio's strengths – one of which being its large amount of live-action experience



“We moved fast and light with this project. Shots would iterate several times and we were constantly reviewing”

Tom Bridges, managing director, Neon



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Images of the month

These are the images that have been awarded Image of the Week on 3DArtistOnline.com in the last month

A Eco Fantasy Bedroom Visual

» **Grzegorz Magierowski**

3DA username Grzegorz Magierowski

Grzegorz says: "This is one of my latest visuals presenting a bedroom concept designed by Anna Burles. The visual was featured at this year's Coronation Festival in the gardens of Buckingham Palace. 3ds Max 2013, V-Ray and Photoshop were all combined to create this final image."

We say: We really do have a soft spot for arch-vis visuals with a sense of warmth and atmosphere. This image certainly delivers!

B Casio Watch

» **Marwan M. Saliba**

3DA username Marwan

Marwan says: "This image is part of my personal work Living Room and Dining Room. Apart from making the textures look realistic with scratches and light wear, I rendered dust separately and added it later during the post-production stage."

We say: The wear and tear on this image, from the scratches on the watch face to the marks on the strap, make for an entirely photorealistic feel. This just goes to show that impressive results don't always require perfect finishes.

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C PavoReal

» **Jose Manuel Linares Lopez**

3DA username mane162

Jose Manuel says: "This was based on a Robb Mommaerts illustration created for Cryptozoic Entertainment's card game, Food Fight. It was created with XSI Softimage and ZBrush for sculpting and posing. It was rendered with 3ds Max and V-Ray."

We say: We're big fans of Jose's work. Every one of his creations is filled with character and detail that really draws you in for a closer look. We can't wait to see what he comes up with next!!

D Brave New World

» **Katarina Macurova**

3DA username Katarina Macurova

Katarina says: "This image was created as a book cover for the book *Brave New World* by Aldous Huxley. I used Blender and then Photoshop for post-production."

We say: This is a simple yet effective illustration for one of the greatest novels of the last century. Katarina's style presents both a thought-provoking and aesthetically pleasing result.



Image of the month



The King

» **Calin Lordache**

3DA username Krefit

Calin says: "This character started from a T-pose concept by Koen Koopman, but I've decided to pose the character and add more original elements of my own. ZBrush was used for sculpting and texturing, while MODO was used for rendering and posing."

We say: We love the expression on this character's face, along with his stylised, blocky appearance.



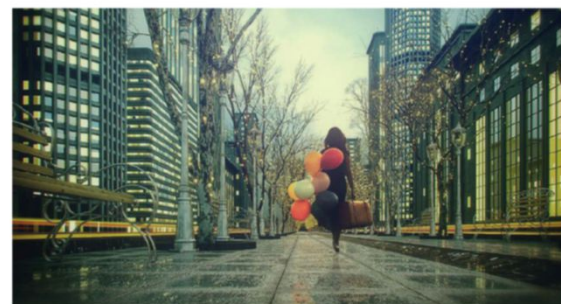
Exotique

» **Peter Ang**

3DA username cgdigi

Peter says: "Exotique is a personal work I created in my free time. I wanted to make an interior scene but with a different look. I applied V-Ray lights to create the natural atmosphere in the scene."

We say: This certainly is a different-looking image! It's not just the character we like, however, but the clutter that sits at her feet. These elements bring a great sense of realism to the environment.



Dusk Empty Sidewalk

» **Mohammadreza Mohseni**

3DA username acinonyxlord

Mohammadreza says: "The idea in this image was to create the nostalgic feeling of my dreams - the walk of emptiness in inertia while the city remains in motion. Streets stretching to the size of my thoughts. I used V-Ray, 3ds Max and Photoshop to achieve my concept."

We say: This is an image drenched in atmosphere. It brings to mind Christmas shopping and all the excitement that infuses that time of year.



Horn

» **Donghoo Lee**

3DA username hoo lee

Donghoo says: "I made this image to test out my abilities with DynaMesh and the BPR renderer in ZBrush."

We say: This is a truly great example of how to sculpt eye-catching facial expressions that intrigue as much as they intimidate. The character's face says a great deal about what he's thinking, without anything needed to be said.



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Top tweets



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@BFXFestival Really excited! Industry partners are en route to BFX! @MPC_VFX @dneq @Cinesite @3DArtist @MillTalent @Framestore @jerryhibbert @outpostvfx

@PatImrie Picked up the latest issue of @3DArtist - brilliant tutorial on re-creating the cover - highly recommended.

@asimus Quite excited about our #BFX team being in @3DArtist magazine. I recommend everyone I know to buy an issue:D @BFXFestival



On the Wall



Facebook.com/
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Image of the day is this *World War Z* concept art piece created with Maya and Photoshop by **Framestore**



Mark N Harrison I remember working on this concept at MPC as a pre-vis.

Richard Jones Was this shot on location? In the Dead Sea, perhaps?
Ba-dom tiss.

If you want to have your work or thoughts displayed here, get in touch with us via email at **3dartist@imagine-publishing.co.uk**, via Facebook at **facebook.com/3DArtistMagazine** or on Twitter **@3DArtist**



Raspberry day **Facebook likes 113**

» **Andrey Kobushenko** • 3DA username **AK**

Andrey says: "Hyperrealism is my passion. I wanted to create the effect of a beautiful photo, so no one could even guess that it's made with CG. I've looked through lots of references and tried not to miss anything, so all the tiny details were taken care of. I've shown this work to my friends and they told me: "Oh, you must be kidding me - it's just a photo!" I had to show them the wireframe!"

Fireplace **Facebook likes 226**

» **Vladimir Kuzmin** • 3DA username **Vladimir Kuzmin**

Vladimir says: "I drew this image in my spare time, inspired by the works of the old masters of painting. The modelling, texturing and lighting were completed in about a month using 3ds Max, V-Ray and Photoshop. I wanted to capture the mood of the old items that are worn, so a lot of time was spent on post-processing."



Social
media
images of
the month



ZBrush workflow tips

I noticed in a recent issue that you mentioned problems faced with a Mesh Insert workflow. This actually has easy workarounds. Here goes: duplicate your base mesh then delete the lower subdivision levels. Now use that mesh to insert or IMM insert other meshes. After dragging out a mesh, go to Hide Points in the

Visibility tab then use the Split Hidden function to make the inserted mesh its own SubTool. When finished, delete the proxy duplicated base mesh.

Brad Gibson, via Facebook

Thanks so much for your tips Brad! Hopefully this will be great use to our readers in the future.



Your Top Wall Posts



Dino Hunt

» **Aybars Turan**

3DA username Aybours

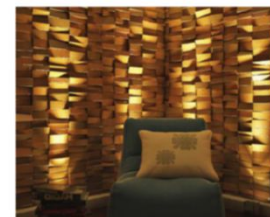
Aybars says: "I created this for the dinosaur movie *Dino Hunt*, which I'm working on as a character artist. I am responsible for modelling, texturing and shading. For the creation of this image I used ZBrush, Maya, MARI and V-Ray. The movie is currently in production. You can get more info at <http://dinhuntfilms.com>."

Some woody corner

» **Eder Xavier**

3DA username Ederguir

Eder says: "This image came from a study I was doing on the Floor Generator plug-in. The result combined with V-Ray lights so nicely that I decided to publish the image on the internet and also in my portfolio."



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Image from Creating and Rigging a Low Poly Robot in 3ds Max and Photoshop



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50

TIPS & TRICKS IN MAYA

Industry experts share their Autodesk Maya tips, tricks and techniques, helping you master every aspect of this versatile software, from modelling and rigging to scripting and dynamics

It's quite surprising to learn that a lead character artist, senior cinematics animator, freelance rigger and senior software engineer all make use of the same piece of 3D software.

Autodesk Maya is one of the most powerful and highly customisable programs available today. It's the Swiss Army knife of CG software, the tool able to fully produce a polished film or animation without ever leaving the program. At the same time it's user-friendly enough to be grasped by beginners. Maya's versatility means it has been used in many different facets of the industry, creating animations, VFX in film and TV and even games. Titles include *Halo 4*, *The Girl with the*

Dragon Tattoo, *Rise of the Planet of the Apes*, *Kick Ass 2*, *Game of Thrones* and much more.

That's why we've brought together a hand-picked selection of successful industry experts to reveal the tips they have used for the best results with Maya, from modelling and animation to scripting, rigging and dynamics. You're guaranteed to learn something new!

Jahirul Amin
www.warpeaceandpixels.com
Rigger, animator and lecturer in Computer Animation



Will Anielewicz
www.linkedin.com/in/willanielewicz
Senior software engineer



Delano Athias
www.digitaltutors.com
Lead rigging and animation instructor



Jonathan Berube
www.berubefilms.com
VFX art director, Blizzard Cinematics



Dawid Cencora
www.dawidcencora.tk
Freelance 3D character artist



Matthieu Garnier
www.matthieugarnier.com
Freelance 3D artist



Eric Keller
www.bloopatone.com
Visual effects supervisor



Lee Lanier
www.beeziebugbit.com
Director, Beeziebug Bit, LLC



Dan Roarty
www.danroarty.com
Lead Character artist at Crystal Dynamics / Square Enix



Turugshan Turna
www.behance.net/mayamouse
Senior art director



Chad Vernon
www.chadvernon.com
Co-founder of Creature Art and Mechanics



Kishore Vijay
www.kishorevijay.com
Senior cinematics animator



Lifeng Xu
www.blog.sina.com.cn/marinfeng
Freelance artist





“I was introduced to Maya in my first year of college at CDIS (now the Art Institute) in Vancouver over ten years ago. I was blown away with the endless tools and features it had to offer”

Dan Roarty

50 tips & tricks in Maya

MODELLING

01 Study anatomy carefully. Learning about the bones and muscles that affect the surface forms will help to sell the idea that your characters have an internal structure. This will inform your decisions as you create the topology. **Jahirul Amin**

02 The adjustment of overall shape and structure is very important in the coarse modelling stage. Getting the muscle anatomy correct at this stage is key for later rigging and painting skin weight. **Lifeng Xu**

03 Use quads as much as possible. You may have to use the odd triangle, but stay away from Ngons. Quads subdivide predictably, are easier to envelope when skinning and give better results during the UV/texturing process. Taking a model from a 3D package, such as Maya, to a sculpting package, such as ZBrush, will also be a doddle if you've stuck to quads. **Jahirul Amin**

04 You might notice that when you import very dense geometry your scene will slightly lag due to all the geometry currently shown in the viewport. If you want to speed up your viewport turn on Backface Culling in your Shading options. This will eliminate the drawing of backfaces in your scene and greatly improve the overall speed of your viewport. **Dan Roarty**

05 Use the Text tool to create some curves and interesting shapes. Place these curves in front of simple NURBS primitives and project them on one or more NURBS primitives from various angles. Use these curves as trim edges to make holes or duplicate the surface curves and lift new surfaces between the curves. **Eric Keller**

06 Leave the camera at a standard focal length (35) or Orthographic view. Try to use perspective cameras with an appropriate focal length. By modelling in Orthographic view you lose the perspective present in a photo. **Dan Roarty**

07 Design complicated models by cutting them into smaller parts. My aim is always to minimise the poly count and

maximise the details. Also, it's good to keep that in mind that Boolean tools can sometimes help create complex models much more easily. **Turuğshan Turna**

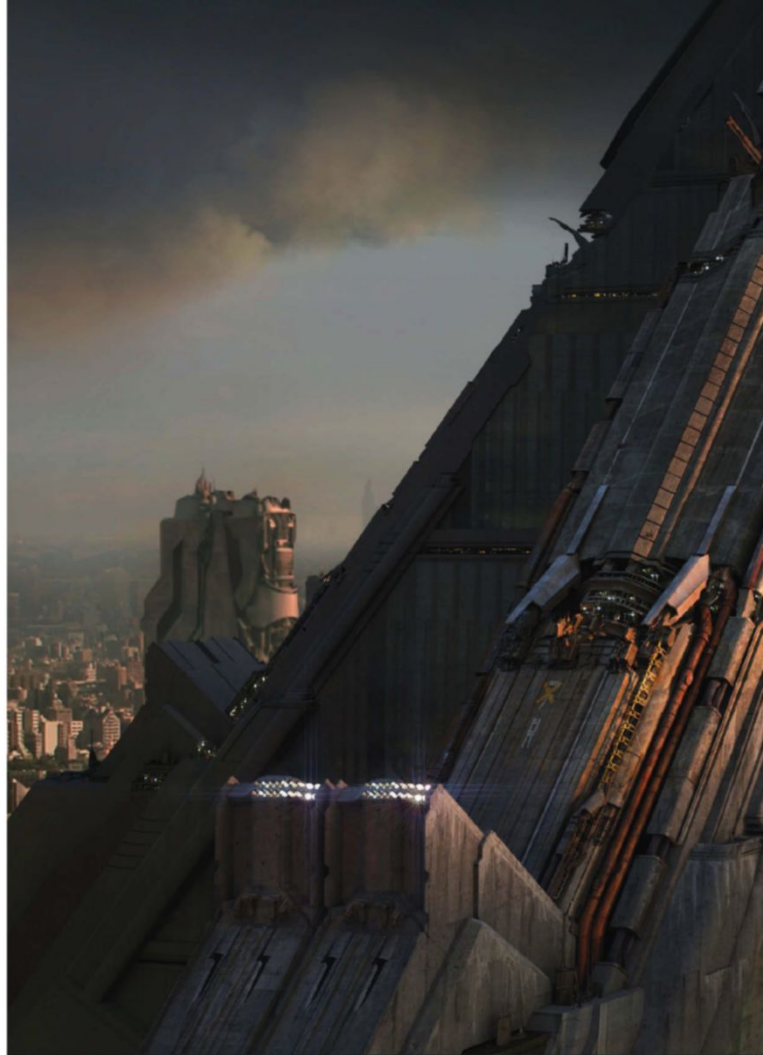
08 A creative way to model a repetitive shape along a path is by using the Animation Snapshot command from the Animate menu. By animating a piece of geometry travelling along a motion path, the Animation Snapshot function will create a duplicate copy of your model every other frame. This can be a great way to create chains, or street lights along your city street network. **Jonathan Berube**

09 A quick way to get a base mesh is by using the Texture to Geometry tool. Create a plane with the same aspect ratio as your projected image, assign the texture to the plane, select your plane geometry and go to Modify>Convert>Texture to Geometry. Browse your input image and then apply. **Jonathan Berube**

10 Prepare for deformation, because good deformation is completely reliant on a model with excellent topology. Pass the model to the riggers at different stages of the development to enable them to test it for deformation. If there are any issues, you can make the changes early on as opposed to on a final model. If it won't be deformed, then you have more room to manoeuvre regarding the topology. **Jahirul Amin**

11 The Create Polygon feature is great for retopologising a mesh inside Maya. I do this by importing the high-resolution mesh then making it Live by selecting the magnet icon. From here I use the Create Polygon tool and draw over the top of the high-res mesh to create my new low-res version. **Dan Roarty**

12 It's relatively easy to bring a Photoshop shape or line as geometry in Maya. Make a selection from your painted shape and create a working path from it. Export the path as an Adobe Illustrator curve (AI curve), then import it into Maya and start creating with it. Use the path as a base for extrusions or as a Snap Align guide for existing geometry. This is a great method for modelling 3D logos or accurate meshes. **Jonathan Berube**



Terra Incognita by Turuğshan Turna. "This project was actually a simple scene that I began to create in order to explore my lighting knowledge with Autodesk Maya. Afterwards, it turned into a classroom for learning the amazing world of Maya's Cloth and Craft Animation tools," says Turna

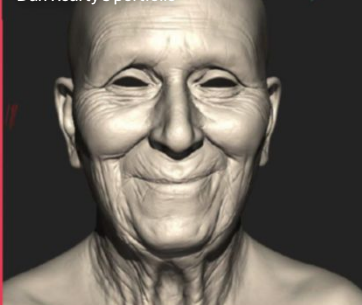
Our contributors reveal how they got started with Maya

I'm self-taught. I learned Alias PowerAnimator in 1994 while interning at Buena Vista Visual Effects at Walt Disney. PowerAnimator was the precursor of Maya and shared many similarities. I learned Maya by using an early beta copy while off-the-clock at PDI/DreamWorks in 2000. **Lee Lanier**

In 1982, I was one of the original engineers at Alias Research, the creator of Maya. My task was to prototype a new artist workstation, the Alias Power Animator. I started using Maya in production at Industrial Light and Magic in 2001. **Will Anielewicz**

My first introduction to Maya was when I was still a student. I learned a bit of both Maya and 3ds Max, but only some basic manipulation with no greater depth. I worked most with traditional media during my student and professional life, but I found many limitations. The effects that I want to achieve are so much easier to accomplish with CG and Maya is such a fine tool for helping me meet my expectations. This is when I shifted my focus to Maya. **Lifeng Xu**

Modelled in Maya, *Happy Birthday Nana*, is an award-winning image from Dan Roarty's portfolio





“Maya has been Digital-Tutors’ most-watched training, with courses starting over 13 years ago”

Digital-Tutors

In his capacity as VFX art director at Blizzard Cinematics, Jonathan Berube uses Maya to work on sequences for videogames such as *StarCraft II*

RIGGING



13 Understanding the functions of your body's limbs and protrusions will help to inform your decision-making during the rigging process. What type of joint is the elbow? How does the shoulder work? How many degrees of freedom does the wrist allow? By answering these questions and more, we can consider where we should place our bones and how our digital characters should articulate. **Jahirul Amin**

14 Stay organised. There's nothing worse than struggling to search for nodes that are difficult to find because of poor naming conventions. Remember: take the time to rename your nodes. **Delanos Athias**

15 Before you even touch the computer, find out what the rig needs to do and how the animator likes to work. Does the character need to run, jump over a fence and then pull off a tornado-kick? Or does he simply sit behind a desk and pick his nose? If it's the latter, then there will be no need to rig the legs as you won't see them, for example. **Jahirul Amin**

16 Strive for efficiency. This concept is important when designing control objects. An example of this could be seen on a foot control. If you add foot-rolling

capabilities, it might be a good idea to create a footRoll channel on your foot control, instead of creating another object to control that feature. From an animator's point of view, being able to tweak the animation of a character's leg and foot roll all from one object means we don't have to spend the time selecting between two or more controls for the same outcome. **Delanos Athias**

17 Automate what you can, but be very careful with this, because we don't want to automate so much that we start to take control away from the animator. For instance, if we're rigging an aircraft that will eventually fly through an environment, we wouldn't want animators to have to animate the vehicle's turbines when this can be handled easily with an expression. On the same note, we wouldn't want to tie the vehicle's banking control to its side-to-side translation. That type of automation would be very restrictive. **Delanos Athias**

18 Look for ways to add controls that will help animators loosen up their characters. This can be done several ways, one of which would include setting up pliable limbs that can be animated to

19 Keep it simple. It's easy for new technical artists to assume that all control rigs must be highly sophisticated, however, this mentality can cause rigs to end up over-saturated with controls, making the puppet very cumbersome to work with. **Delanos Athias**

enhance arcs, follow-throughs and push silhouettes for staging. These are key animation principles that are, ultimately, used to make character performances more appealing. It'd be safe to say that the more flexible our rigs are, the higher the chances an animator has of enhancing the quality of a character's movements. **Delanos Athias**

20 By understanding anatomy, we can see what anatomical structures we need to replicate faithfully and which will enable some rigging license. The spine, for example, has 24 bones. Do we need that many bones in the spine for our characters? No. But we do need to know how it articulates so we can mimic the movement that it creates. **Jahirul Amin**

21 Keep joints and controls clean. All rigs should be able to revert back to the default pose by zeroing out the Translate and Rotate values of the joints or the controls. I've seen occasions where this is not the case and you can imagine the animator's fury. Rigging shouldn't be rushed, because good animation won't come from a bad rig. Just as modelling affects deformation, rigging affects animation. **Jahirul Amin**

50 tips & tricks in Maya



Jahirul Amin suggests performing the actions being animated yourself. This way you can better understand the mechanics of the movement.



Matthieu Garnier combined Maya with Photoshop and rendered in V-Ray to achieve this atmospheric result

ANIMATION

22 Commands or selection sets for your character that are often repeated can be saved on custom shelves by simply middle-mouse-dragging the scripts from the Script Editor onto your shelf. **Kishore Vijay**

23 The Graph Editor is your friend. Yes, it may look scary at first. Yes, your animation curves may look like a bad bowl of spaghetti here and there, but learning to take charge of the Graph Editor will pay dividends later on. It enables you to make broad changes, create fluid arcs and tidy up any troublesome issues. **Jahirul Amin**

24 When gathering reference, don't just look at other animation references but open your eyes to the real world. Go out, grab a pen, a pad, a camera and anything that you can use to document movement first-hand. By solely looking at animation reference from books or online, you are relying on someone else's interpretation of what they saw. **Jahirul Amin**

25 Use a polygon edge as an easy way to attach an object to a surface as it moves. Select an edge on a polygon surface and choose Modify>Convert Polygon Edges to Curve. Add a locator and attach it to the curve via a motion path with the Time Range set to Start. Use a point or parent constraint to attach an object to the locator. To make the object move along the curve, animate the U value of the motion path. As long as the history connection between the duplicated edge and the original polygon surface remains, the attached object will be stuck to the polygon surface. **Eric Keller**

26 Customise with plug-ins, scripts and shelves. The most useful thing to realize is that Maya is flexible and has tons of

priceless tools available online courtesy of its massive user base. You can easily look for planning tools, in-between tools, pose libraries, channel and curve filters, or constraining tools. The Grease Pencil was one such plug-in that is now available with Maya 2014. **Kishore Vijay**

27 Groups are your friends. Grouping an object before constraining the group allows you to still offset the object while it's constrained. Constrain the character's hand to the prop, animate the prop and switch to constraints or between IK and FK in one frame during a fast move, so it's easier to avoid pops. **Kishore Vijay**

28 You don't need to figure out how to send the next astronaut to Mars but by having a knowledge of physics and biomechanics, you can utilise the wisdom of geniuses such as Newton and Borelli. How does gravity affect an apple falling and therefore how many frames would it take to hit the ground? Where is the centre of gravity on that hammer I just threw across the room and how does this affect its rotation in the air? **Jahirul Amin**

29 Set up your workspace efficiently. Dual Monitors greatly increase your speed. You can tear off a panel and have a floating viewport in your second monitor. Simply go to Panels>Tear Off or Tear Off Copy. You can also set up hotkeys for most used functions: Windows>Setup/Preferences>Hotkey Editor. **Kishore Vijay**

30 A quick way to copy a pose from anywhere in the timeline is to middle-mouse-drag from the selected frame and set a key at a new frame. To scrub through your animation, hit K and drag anywhere in your window. You can also change your preferences to increase the height of the time slider and increase the Key Tick Size (Window>Settings/Preferences>Preferences>Time Slider). **Kishore Vijay**

31 When animating, you should be acting out the movement and feeling that emotional beat of the character. You can't do that by looking at the screen all day, so stand up and perform the action. Understand where your body weight is, what's leading and what's following. Are your acting choices clear or could they be stronger? Is your timing working? Questions like these should all be answered before hitting the computer. The last thing you want is to realise 20 hours in that your animation is not working. **Jahirul Amin**

Kishore Vijay's animation workflow guide for pose-to-pose and straight ahead blocking, as well as layering methods

1 In general, I block in most shots and start working in pose-to-pose. I then begin working straight ahead through certain actions. For short shots, ballistic actions or animation cycles, as well as for most lip sync work, I prefer to work in a layered fashion. For example, for a dialogue scene that needs many levels of lead and director approval, I would do very detailed blocking in Step mode for all the body animation, maybe blocking in key face poses. I would also animate the face in a layered fashion, treating the upper face animation as a separate layer from the lip sync. I then break up the lip sync into the jaw-up and jaw-down movements, as well as the in and out motions of the lip corners. First I lock down the timing and then begin layering in the mouth shapes and more detail.

2 When blocking in Step mode, make a selection set or a shelf button that selects all of your character controls and set a key on each pose. This is useful when you need to be able to make rapid changes depending on feedback. It also helps to set up a hotkey to switch between Linear and Step modes as you block, to check for gimbal issues with rotations, especially in the wrists or FK arms. Navigating to Graph Editor>Curves>Euler Filter is a quick fix for Gimbal flips, as is changing the rotation order.

3 Use 2D Pan/Zoom to focus on areas that you want to polish without changing the perspective of your shotcam.

4 Add a reference movie, storyboard or 2D blocking of your scene to the imageplane of your shotcam or a secondary camera for quick reference during animation.

SHADING, LIGHTING & RENDERING

32 It's not mandatory that all lights cast shadows. In many cases, you can activate shadows for the key light (the scene's main light, which is often the strongest) while leaving shadows off for fill lights (weaker secondary lights). Activate shadows incrementally and test render at each step. Multiple overlapping shadows often appear unaesthetic. **Lee Lanier**

33 When lighting, work with one light at a time, creating, placing and adjusting the key light before adding a second fill light. Adjust this before adding a third rim light. This method is more efficient than adding a whole bunch of lights at once and trying to simultaneously adjust them all. **Lee Lanier**

34 Create a new render layer, turn off all the lights, then make a volume light with the following settings: Emit Diffuse and Specular: Off, Volume Light Dir: Outward, Emit Ambient: On, Shadows: off. Select your objects and apply a Lambert shader with the Diffuse Color set to 100% white. Position the volume light to surround your main subject, then render an image sequence. Import the images into your compositing program and use this as the source for ZDepth in your defocus effects. **Eric Keller**

35 When modelling a head, it's very important to see how the forms, wrinkles and overall structure of the face will read under different lighting conditions and angles. When I've created a head I'll bring a version of it into Maya and test it under different lighting conditions in the viewport. You can do this by creating a basic directional light, turning on Shadows and viewing it in Viewport 2.0. It's quicker than rendering and also interactive, so you are able to see how it reads while moving and rotating the light. **Dan Roarty**

36 Use the Color Gain and Color Offset attributes found in a texture's Color Balance section. You can tint, darken, or lighten a texture by changing the Color Gain or Color Offset. You can then layer two textures by mapping the Color Gain of one texture with a second texture. **Lee Lanier**

37 To determine bitmap texture resolution, consider the render resolution and Texture Screen Size. If you're rendering HD 1,080, yet the texture is on an object that takes up a 100 x 100 section, you can get away with a 256 x 256 texture. If the object fills the screen, you'll need a texture that's at least 2,048 x 2,048. **Lee Lanier**

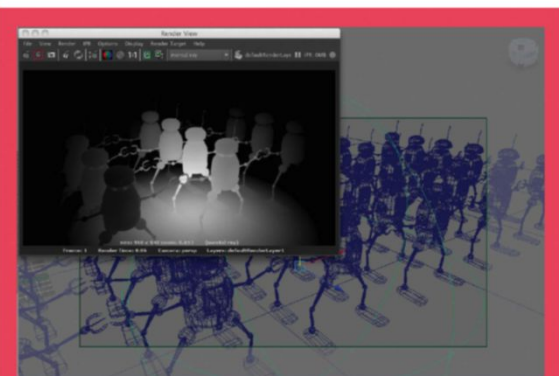
38 Maya supports super-white values, values over 1.0 on a 0 to 1.0 scale.

You can set any colour swatch to a super-white value by switching to HSV and manually entering the V value. If you render a Floating-Point format, such as OpenEXR with a 16- or 32-bit mental ray frame buffer, super-white values will be stored in the rendered image. **Lee Lanier**

39 Use the Caustic Visualizer for real-time raytracing. This Maya plug-in will dramatically speed up the lighting and rendering production workflow. The software provides a true viewport preview of your Hypershade network, plus batch rendering as well. Details about the plug-in can be found here: www.caustic.com/visualizer/maya. **Will Anielewicz**

40 Automatically organise your rendered images by using the Keyword feature in the file name prefix field of the Common tab of the Render Settings. Artists often render many versions of a project and later have a difficult time figuring out which Maya scene file created a render. This feature instantly ties the scene file with the rendered images. **Will Anielewicz**

41 Mental rays' Final Gather is a great global illumination (GI) optimisation feature for secondary diffuse light. It instantly adds more photo-realism. However there are two major rendering artefacts that often occur: Final Gather flicker and splotchy gradations in soft lighting. To fix both these issues, I use a simple but counterintuitive approach with the Final Gather Point Interpolation settings. I set the default value to between 100 and 300, depending on the extent of the artefacts, to blur the GI results. The lost edge details can be retrieved by introducing the use of ambient occlusion when assembling a final beauty image with raster passes. **Will Anielewicz**



Eric Keller on his volume light method

Using the volume light method for creating a custom Depth pass opens up a lot of creative potential when you import the pass into your compositing program.

For example, you can set the blend mode of the layer to Overlay, place it above your beauty pass and then lower the opacity. This adds depth to the scene by brightening your area of focus and darkening the surrounding area. This can be the subtle touch that makes the image pop.

If you animate the camera in Maya, try constraining the volume light to the Aim Locator of the camera so that you can precisely control the illuminated area. This helps especially for creating complex rack focus techniques when you use the depth pass as a way to generate DOF blurring. You can even have more than one volume light as a way to create multiple areas of focus. Be aware that if any objects in your beauty pass have Displacement maps applied, you'll need to apply those maps to the Lambert shaders on the same surfaces in your custom render layer or the edges of the surface will not match in the composite.

Little Dead Girl By
Lee Lanier



Porsche 918 Spyder By
Will Anielewicz



50 tips & tricks in Maya

“I love the career path that I’ve chosen. I enjoy the sense of accomplishment that comes with creating work that I love”

Lifeng Xu

Cyber Girl by freelance artist Dawid Cencora. “If you’re working on a model which is going to be animated you might want to make a basic rig on base-mesh level to check if your model will move correctly,” he says

SCRIPTING & DYNAMICS

42 Definitely learn Python over MEL. Only learn MEL if some aspect of the Maya-to-Python interaction isn’t fully implemented. **Chad Vernon**

43 Never hard-code anything that ties your tools to a specific pipeline or workflow. Don’t hard-code naming or file path assumptions. These should all be accessible and easy to change. **Chad Vernon**

44 Some MEL codes might save you a lot of time. For example, if you want to select all faces within a UV shell without opening the UV Editor, use this: ‘polySelectBorder Shell 0;’ **Turuğshan Turna**

45 Look at other Python-based libraries and resources besides ones tied to Maya (such as Django and Stack Overflow) for examples on good Python design and implementation. **Chad Vernon**

46 Always separate user interface interaction from actual tool logic. Tools should always be able to work without the interface. **Chad Vernon**

47 Build creative fluid techniques using paint effects. Select your surface and make it Paintable. Apply to the surface using the Pebbles brushstroke found in the Fun folder of the Visor. Convert the pebbles into polygons, then select the converted strokes and turn off Primary Visibility on the Render Stats. Create a Fluid Container and add the polygon pebbles as a Surface Emitter. Adjust

the fluid settings to create plumes of smoke or fire from each polygon pebble. Try animating settings for the pebble brush to create an animated emitter. **Eric Keller**

48 Don’t repeat yourself. Logic, equations, design and architecture should each have just one place of origin. Duplication makes code even harder to maintain. **Chad Vernon**

49 nCloth can provide very realistic folds and form for your fabrics. Create the geometry of the tent or drapery as if it were lying flat on a table. Select the objects which are supposed to collide with it and apply the Create Passive Collider command to them. Select your fabric mesh or tent, place above the collider object, apply the nMesh command, create nCloth and press Play to initiate the simulation. Duplicate the simulated mesh and enjoy a realistic folding pattern. **Jonathan Berube**

50 Make particles chase an object along a motion path. Attach a polygon object to a motion path. Convert the object into a passive collider using nDynamics. In the nRigid Attribute Editor turn on Force Fields. Set the Force Field Strength to a negative value so that it attracts objects. Add the nParticle object and adjust the force field distance in the nRigid settings. This method provides more intuitive and powerful controls. **Eric Keller**



Chad Vernon created facial and deformation tools as a creature TD. He has a B.A.S in Animation and VFX from Ex'pression College for Digital Arts

Global tips for everyone

Go full-screen! Sometimes working off your laptop might be a necessity. Maya has a pretty busy interface to begin with, which might make your laptop workflow difficult. Hitting Opt/Alt+Spacebar will hide all the window tabs away, just like how Tab hides all the tabs in Photoshop. **Jonathan Berube**

To excel in any of these disciplines, you need to do one crucial thing: practise. By practise, I do not mean spend ten minutes here and there or two hours, one day a week. I mean two to three plus hours a day. There may be the odd person where everything just slots into place and makes sense, but for the average person practise makes perfect. When you get to that stage where you think everything is perfect, keep striving to learn more and better yourself as well as those around you. **Jahirul Amin**

Preparatory work is very important. It is a key component for my work. During the observation stage, I focus not only on the effects of aging on human anatomy, I also try to see an inner expression, as well as how this is expressed over their facial emotions.

Lifeng Xu

Before starting work, gather as much reference as possible and talk everything over with your supervisor. Name every new object and shader. It's important to keep order on the scene so you don't get confused when there are many objects. Naming them correctly will be helpful for anyone who takes over the scene later on.

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GAME CHANGERS

Digic Pictures, the imaginative VFX studio behind some of the most high-profile videogame cinematics, discusses its extensive portfolio and looks ahead at the challenges of a rapidly evolving medium





“OUR AIM IS ALWAYS TO
CREATE SOMETHING THAT
IS MORE THAN JUST COOL
AND VISUALLY PRETTY
– WE WANT TO MAKE OUR
TRAILERS MEMORABLE”

Alex Sándor Rabb, producer

Halo, Mass Effect, Assassin's Creed, Castlevania, Prince of Persia – these are among the most visually groundbreaking and recognisable videogame franchises of recent years.

But in today's industry of big-budget tentpole releases, being among the most iconic brands doesn't guarantee success. Publishers are increasingly turning towards VFX houses to conjure cinematic showcases to artistically demonstrate the themes and style of upcoming products, with pre-rendered promotional trailers and in-game intros becoming synonymous with top-tier videogame titles. That's where Digid Pictures comes in. The pre-eminent Budapest-based 3D animation and visual effects studio has, in the last decade alone, produced some of the most celebrated and award-winning in-game and promotional sequences for companies such as EA, Ubisoft and Konami.

Digid specialises in emulating the flourish of a Hollywood blockbuster, using its world-class artistry to sell the idea of cinematic bombast within the boundaries of each vividly conceived virtual world. It started in 2003, when the studio was founded to produce five fully animated 3D shorts for a new real-time strategy game. “Digid was originally formed for the sole purpose of creating the cinematics for *Armies of Exigo*,” reveals producer Alex Sándor Rabb. “The goal was to reach the

level of quality seen in Blizzard's cinematics for *Warcraft 3*, which was considered to be the industry standard at that time.”

The first challenge in the formation of the studio was to dip into the talent pool of the Hungarian capital, recruiting a team of experienced artists disciplined in realistic computer animation. “These artists and developers had to build a pipeline to deal with such content,” says lead modeller Tamás Varga. “They also had to develop workflows and tools to create the characters and environments, animate them, add effects, render it all and then composite everything. Perhaps even more importantly, Digid had to learn about movie-making in a format very different from 30- to 60-second commercials; staging scenes, using cameras and basically telling a meaningful story in this new way.”

The gamble paid off, as the success of the shorts would earn the studio the distinction of becoming the first Hungarian project ever to graduate for selection at the SIGGRAPH Electronic Theatre. “There are probably many different ways to gauge success,” responds Sándor Rabb when asked whether there's a formula to the studio's continued prosperity. “It could be the number of views on the internet, or sales figures for the game itself, but our aim is always to create something that is more than just cool and visually pretty – we want to make our trailers memorable.”

Game change



Halo-developer 343 Industries is just one of the big-name studios that Digid has worked with on breathtaking cinematic sequences



"We want to deliver quality films to our clients while maintaining a comfortable workplace for our team – a place where everyone is happy to arrive in the morning and do their best," says Svéd

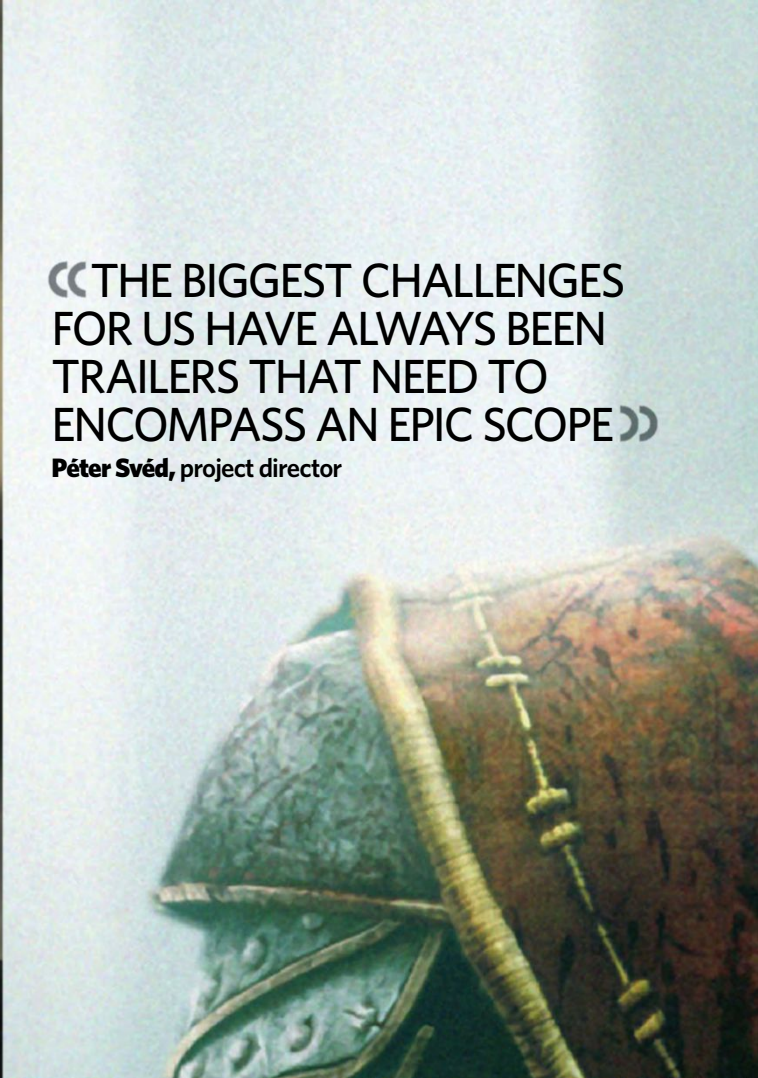
DIGITAL WORLDS

There's little doubt anyone will forget Digid's work on *The Secret World*. Digid embraced the massively multiplayer game's attempt to break free from the limitations of its genre, delivering a series of character shorts that showcased the title's Lovecraftian themes and invited viewers to enter the rich, dark, fantasy world through the perspective of a range of distinctive personalities. "Funcom approached us with a well thought-out overall brief, the concept being to introduce each of the main characters in their own dedicated shorts," says project director Péter Svéd. "We actually took the opportunity to experiment with integrating some live FX plates we filmed into some of our shots. On the 'Grifter' piece, for example, we recorded water tinted with ink running down an improvised greenscreen – this was used for the spooky fluid running up the walls in the toilet scene at the end of the film. Similarly, we used real milk in our live FX plates for the milkshake blender shots in the 'Firestarter' piece. However, we've moved away from this approach since then. These days we aim to create all of our FX in full 3D. This way we can maintain more artistic control and have no issues with integration."

As Digid's portfolio was starting to gather momentum, so too was its craftsmanship. When it came to executing the sweeping camera shots that flew across oceans,

middle-eastern dustscapes and vast Mediterranean cities in *Civilization V*'s epic cinematic, the studio had already established a precise animatic process. "For us, the animatic is not just a pre-vis phase to be discarded later, it's actually where all of the camera work and major layout elements are finalised," states Rabb. "Indeed, the animatic is where directing as such happens. Therefore, the aim is to get the animatic as close to final result as possible in terms of the edit, the angles and the timing of all key action. We do our best to have our mocap sessions as early as possible so that we can incorporate at least all of the hero characters' performances into the animatic. This helps us lock the cameras as soon as possible, which then makes the rest of the layout work and shot-specific setup decisions possible."

The *Civilization V* project was notable for its expressive and authentic facial animation, which was completed painstakingly by animating intricate key frames. "Our face rigs are technically not too complex, so we can quickly rebuild them when necessary," explains Svéd. "We try to keep all of the deformations in a single blendShape system and focus on the quality of the shapes themselves instead. For example, the old chieftain's neck skin is not using any simulations, just some carefully sculpted blendShapes animated by looking at video references. We also chain several



“THE BIGGEST CHALLENGES FOR US HAVE ALWAYS BEEN TRAILERS THAT NEED TO ENCOMPASS AN EPIC SCOPE”

Péter Svéd, project director



DIGIC MOTION DISCUSSES THE STUDIO'S ON-SITE MOTION-CAPTURE STUDIO

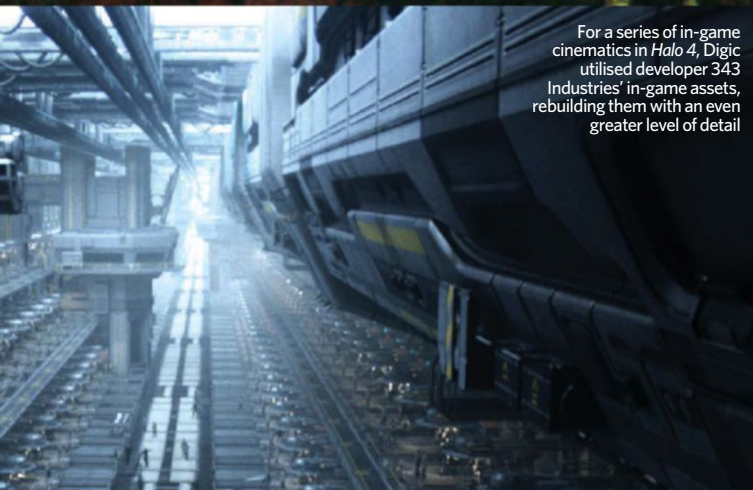
Established four years ago, Digid Motion is a motion-capture facility that not only enables Digid Pictures to keep all of its mocap work on-site, but offers a high-resolution and accurate performance-capture for a range of feature film, television, commercial and interactive markets.

"We established Digid Motion in 2009, right next-door to Digid Pictures," says project director Péter Svéd. "Obviously, it makes a huge difference to us to not have to travel for mocap sessions and be able to easily record pickups and so on. At the moment we have 16 of Vicon's T160 cameras and use Blade 2, which enables us to view our 3D scenes in real-time as we record. Digid Motion not only caters to the production needs of our own projects, but it is also available for any interested productions."





The studio has worked within some of the biggest brands in modern entertainment, including *Warhammer*, *Halo*, *Assassin's Creed* and *Mass Effect*



For a series of in-game cinematics in *Halo 4*, Digidig utilised developer 343 Industries' in-game assets, rebuilding them with an even greater level of detail



The challenge for Digidig on each videogame project is conveying the tone of a product rather than the actual gameplay, thus creating a leap point for the player's imagination

blendShape nodes for some non-linear deformations like sticky lip corners."

"Although the end results work well, this completely manual process takes a long time," adds Varga. "For this reason, on more recent projects we've moved towards using image-based facial capture to provide a good basis for our animators to start out with. What this means is that video footage is taken of the actor's face (usually from a small head-mounted camera during motion capture) and the key features of the face (eyes, mouth, brows) are then tracked frame-by-frame. An algorithm then converts this data into animation curves that can be applied to our facial rigs, which then essentially drive all the available facial blendShapes we've created for the character. A lot of hand-tweaking is still required on top of the raw automatic solution to get decent end results. Nonetheless it's still very helpful in establishing a realistic timing for the gestures and lip-sync. It saves the animators a lot of time, which they can then spend on getting the nuances right."

EVOLUTION IN ACTION

"Scope is a key word for us at the beginning of every project," says Svéd, musing on the challenges that come with conveying scale in a manner that in-game visuals simply can't. "The biggest challenges for us have always been trailers that need to

encompass that epic scope. A good example is our *Mass Effect 3* campaign trailer, where we had to create shots at the scale of a ladybug on a blade of grass, open that up to a field of sunflowers, then entire cities getting destroyed – finally all shown from outer space."

Delivering both the pre-release and announcement trailer for *Mass Effect 3* was a daunting task for the studio and its work on the sequel easily ranks as its highest-profile project to-date. "We always feel pressure to deliver top-notch work, regardless of the client or project," Svéd explains. "We really do put pressure on ourselves to make each of our films better than the last. It is also equally important to us to keep improving our methods." This philosophy paid off in the case of *Mass Effect 3*, with the announcement trailer being listed for screening at SIGGRAPH, Vancouver, 2011. Svéd recalls the vast technical challenge of the ensuing campaign trailer – due in part to it being Digidig's first project produced in stereo 3D. There were a number of unique hurdles this posed for the studio: "I remember the main simulations in the shot with the skyscrapers collapsing right on top of the camera were achieved using Houdini," says lead technical director, Szabolcs Horváth. "The FX work in the shot of the industrial compound getting blown up by a laser-beam was done using 3ds Max for most of the debris and sparks, as well as

Game changers



One of Digid's most impressive skills is in facial animation - an area in which it's delivering increasingly impressive results

FumeFX for the explosions." In each case the cached simulations were brought into Maya via the studio's asset-management system, then rendered.

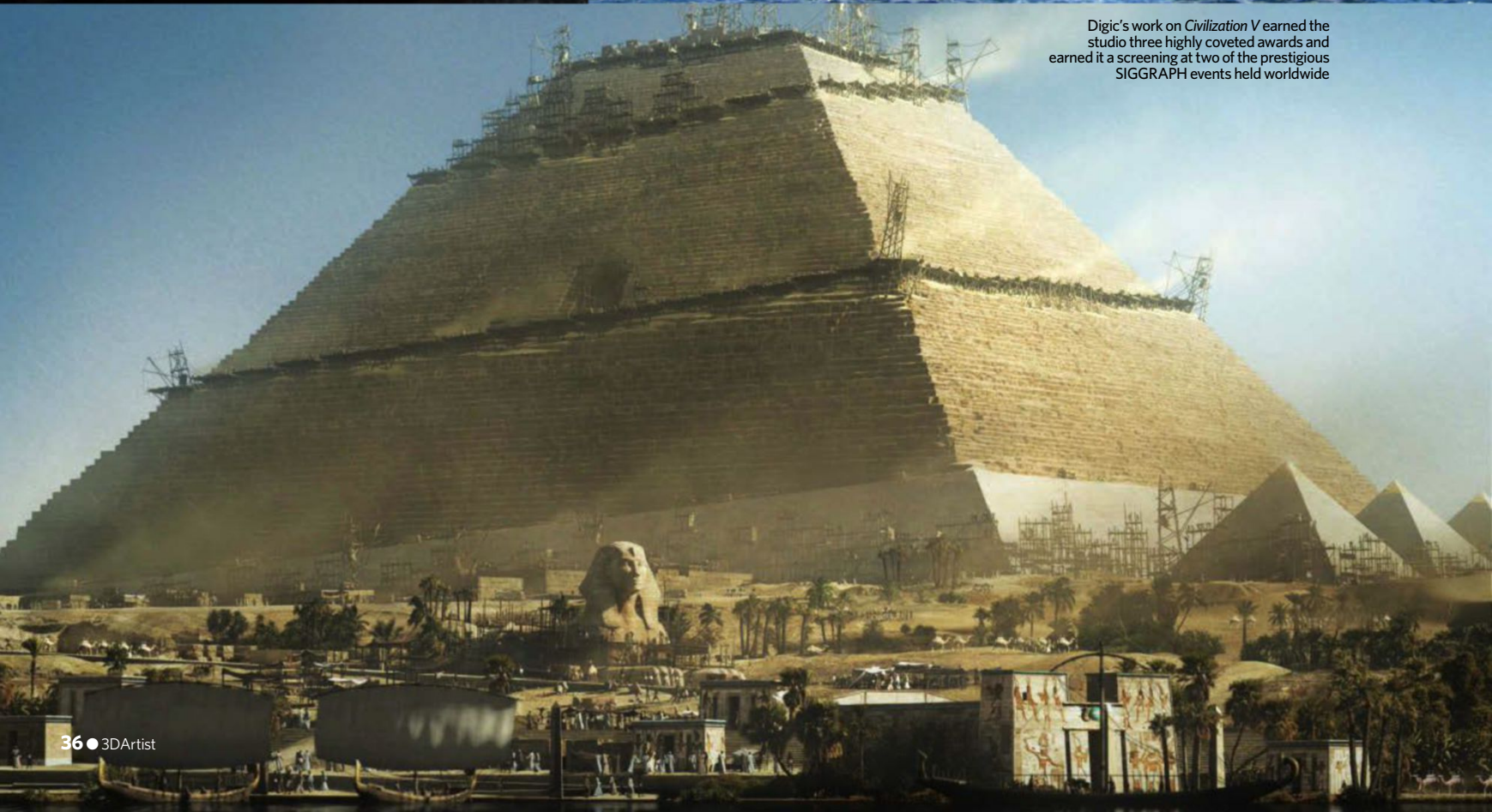
"The 3D phase is built upon Maya's two-camera stereo rig (we've taken out the middle camera completely, to spare our rendering resources)," continues compositor Vilmos Thernesz. "Depending on the demands set by the spatial structure of a given shot, we sometimes used more than one stereo rig, with highly varied parameters. We had to doubly render (left and right camera) and store each layer and its component channels such as Normal, Position, Fresnel, Incidence, Reflection, Refraction, Specular, Translucency, ZDepth, light passes and so on. A script helped to make all the relevant meta-data written into our 3D renders available to our NUKE

stereo cameras, so we could change their parameters during compositing. This proved sufficient for matte paintings projected onto exact 3D geometry. However, for projections onto simple planes we had to create 2D masks or fake a Z-like channel in Photoshop to help place the matte painting in stereo space."

The studio's steady evolution over the past decade matured both its ability and toolset - transitioning from rendering in Pixar's RenderMan, to mental ray years later and now to Arnold. On the modelling front ZBrush has become the dominant tool, while a heavily augmented Maya remains the backbone for animation. Likewise, as the studio advanced, so too had the demands of publishers. For Microsoft's *Halo 4* Digid was tasked with producing four pivotal narrative sequences to bookend the playable



Digid has worked on every entry in the *Assassin's Creed* franchise since the second instalment. The studio is now well-versed in stylised action



Digid's work on *Civilization V* earned the studio three highly coveted awards and earned it a screening at two of the prestigious SIGGRAPH events held worldwide

campaign. "Fortunately, the client approached us with a crystal-clear brief and fully approved final scripts for each piece," muses Svéd when recalling the project.

"This enabled us to sensibly schedule production across all four films, and to work out the most optimal and efficient time frame for producing the animatics, assets and so on." The sequences were more performance-driven than previous projects in Digić's history, which spurred the studio to employ full performance-capture to ensure each scene felt

grounded. "Each one of the film's dialogue sequences were recorded continuously in their entirety, in a number of long takes, with each running for over three minutes,"

continues Svéd. "The recorded motion data for the chosen take went through our usual pipeline, (clean-up in Blade and retargeting work in MotionBuilder). The facial video footage was processed using Faceware's Analyzer here on-site, then sent to Faceware for parameterisation. The returned animation data served as the basis to drive our facial rig, providing good basic timing. This process was then followed by lots of tweaking."

Another challenge was replicating the vivid art style of *Halo*, and remaining true to one of the medium's most iconic and dominant heroes. "343 Industries had a very specific visual style that we had to adapt," says Varga, outlining the challenge of tackling a beloved sci-fi world while eschewing genre clichés. "For all the assets that appear in the game, like the lead character Master Chief, we had to follow their designs very closely, while increasing the level of detail where necessary. On the other hand, the story cinematics also had characters and sets that had no in-game counterpart or any concept artwork done at 343, so we had to create everything in the same style and with the same level of detail, from scratch. A general dilemma when dealing with sci-fi is that, at first glance, we must accept the environments we see as livable spaces. However, at the same time you want to avoid the generic, mainstream sci-fi look and create a world that is a little bit different."

But by far the most momentous task was modelling the UNSC Infinity – a hulking spaceship spanning several miles that plays a pivotal role in the game's narrative. "For an

object this size to be convincing, it had to be very intricately detailed, otherwise the illusion of scale is lost," says Kornél Ravadits, lead environment artist.

"Modelling for this 6km spaceship was based on an in-game design given to us to start out with. It was remodelled by the end, with several steps of refinement added when made necessary by camera angles. The larger surfaces were spruced up by adding thousands of small 3D elements, as well as windows and docks painted onto

these surfaces – all of which helped create the spectacular yet believable sight of a city-sized metal colossus floating in space.

"The challenge during texturing and shading was to achieve what sci-fi metal is –

something that everybody knows but no one has ever seen," continues Ravadits. "Another thing that helped create the feeling of immense scale was the addition of several other spaceships that were orders of magnitude smaller: the Halcyon-class cruisers and the seemingly tiny Pelicans. Of course, these smaller models were no less elaborate than their gigantic counterpart."

“A DILEMMA WHEN DEALING WITH SCI-FI IS THAT, AT FIRST GLANCE, WE MUST ACCEPT THE ENVIRONMENTS WE SEE AS LIVABLE SPACES”

Tamás Varga, lead modeller

"The palace in the *Dragon Age* trailer was built using a few hundred building blocks repeated a finite number of times," says Ravadits. "This achieved a coldness to its look and a feeling of a certain inhuman void"

AN ANIMATED FUTURE

When discussing the technical challenges of creating a cinematic short as compared to a full-length feature, Peter Svéd expresses that Digić has no experience to contrast. However, he suggests that Digić might look into a feature film in the future: "We've never done an entire animated feature film before," says Svéd. "The approach and process would be very different to how a three-minute trailer is made. It's a completely different kind of storytelling, not to mention the difference in scope and every other issue that brings up. Nevertheless, that is a challenge we are looking forward to tackling sometime in the future."



Digić's work on cinematic teasers for past *Warhammer* videogames has greatly added to the anticipation among fans





"To be able to set the appropriate mood and provide backdrop to the story itself, several hundred individual props and unique set elements were created – usually over 500 on *Assassin's Creed* trailers," says Ravadits

THE NEXT STEP

Things are only set to get bigger for Digic in the coming years. It's recently finished working on *Watch Dogs'* and *Assassin's Creed IV: Black Flag's* marketing material, the seventh collaboration between the studio and French publisher Ubisoft. This is a relationship built on trust according to producer Sándor Rabb, who has seen the studio expand substantially since its first partnership with Ubisoft back in 2008. "Back then we counted less than 30 employees, whereas now we're closer to 120," he says. "Obviously, we're now a very different organisation than what we were back then and this is reflected in every aspect of how we work, from the management level all the way through to specific technical solutions."

Besides software advancements over the past five years, Svéd recalls that Digic would often travel to Prague to complete mocap sessions, whereas the studio now operates its own mocap studio locally. Likewise, the medium for which the studio offers its expertise has dramatically changed in recent years, looking ahead to a more technologically advanced era of home console experiences. Set during the golden age of piracy, *Assassin's Creed IV* is the first of the series to arrive on next-generation consoles, which offers players a higher level of visual fidelity, not to mention the computing power to generate more expansive worlds than ever before. To match this level of detail, Digic embarked on more extensive means of realising key assets within the pre-rendered cinematic. "We decided very early on that Edward's rag-tag crew of pirates could not be created

with some modular system, where we would just reuse various pieces and randomly generate the characters," states Varga. "It would not have been enough to make each of them truly unique and alive. Our solution was to take a thorough look at our character pipeline and streamline everything we could, so that we can build as many assets as efficiently as possible within the given budgets and schedules. It was a bit risky as we hadn't had enough time to test the new methods in practise, but everything worked out well in the end."

Yet, as the quality of videogame software advances at a rapid rate, we've seen publishers rely less on external studios to create pre-rendered sequences and use the videogame's own engine to construct highly detailed and spectacular in-engine rendered cinematics. With two new consoles on the horizon, PlayStation 4 and Xbox One, is there a near-future where Digic's services will no longer be needed?

"Some of these in-game rendered cinematics are indeed very impressive," admits Svéd. "Nonetheless, we believe that there will still be a place for pre-rendered trailers and cinematics in games for quite some time to come. The technologies for creating top-quality pre-rendered CGI are constantly advancing as well and these results will stay a few steps ahead of real-time technologies for some time yet."

"Importantly, we believe that our studio gets commissioned to create these films not just because we can churn out great-looking renders, but because we're good filmmakers and storytellers," concludes Svéd. "In other words, there will always be demand for cinematics that really are cinematic."

TIMELINE

2003 *Armies of Exigo* (Electronic Arts)

Digic Pictures began life as the cinematic department for Black Hole Entertainment, working solely on creating animated sequences for the developer's real-time strategy title, *Armies of Exigo*, between 2003 and 2004.

2005 *Warhammer: Mark of Chaos* (Namco Bandai)

Digic provided both the pre-release teaser trailer and intro movie for the real-time strategy title based within the immensely popular *Warhammer* universe.

2006 *Children of Glory* (C2 Pictures)

Digic provided VFX work for the heartfelt film that commemorates Hungary's Revolution of 1956, taking place in both Budapest and at the Melbourne Olympic Games.

2007 *Universe At War Earth Assault* (Sega)

Another intro movie for a real-time strategy title, this time Digic adapted a science-fiction concept to create an intense battlefield populated with gruff marines, aliens and robots.

2008 *Warhammer: Battle March* (Namco Bandai)

Returning to the *Warhammer* universe, this short cinematic introduced some of the fearsome creatures that players have to battle within the game.

2008 *The Secret World* (Funcom)

A series of promotional shorts that conveyed the gothic, supernatural themes of the contemporary massively multiplayer online game, *The Secret World* character spots were widely celebrated for their evocative imagery.

2008 *Aliens: Colonial Marines* (Sega)

The teaser for Sega's *Aliens* sequel replicated some of the film's most iconic imagery to unnerving effect, drumming up plenty of excitement for the title in the process.

2008 *Darksiders* (THQ)

Digic heralded the apocalypse, as demonic forces took to the streets of America in an epic trailer that offered a prelude to the action.

2009 *Assassin's Creed II* (Ubisoft)

Praised for its "clear cinematography, amazing surfacing and world-class rendering" by SIGGRAPH, Digic immersed viewers into the deadly side of the Italian Renaissance.

2010 *Prince of Persia: The Forgotten Sands* (Ubisoft)

The second collaboration with Ubisoft featured stunning elemental effects and beautiful middle-eastern vistas to sell the latest chapter in the long-running *Prince of Persia* series.

2010 *Assassin's Creed Brotherhood* (Ubisoft)

Returning to the *Assassin's Creed* franchise, Digic implemented sweeping camera shots of the Italian architecture as ancient warriors prepared for battle.

2010 *Dragon Age II* (Electronic Arts)

In the creation of the trailer's stunning battle sequences, Digic employed stunt men based in the movie industry to help truly sell viewers on the breathtaking action.

2010/2012 *Mass Effect 3* (Electronic Arts)

Creating a stirring vision of a ravaged Earth, Digic's announcement trailer for *Mass Effect 3* displayed cataclysmic destruction on a global scale. It was followed by a full pre-release trailer.

2011 *Assassin's Creed: Revelations* (Ubisoft)

Voted one of the best videogame trailers ever, the attention to detail paid to environments, narrative and choreography make for an outstanding display of Digic's skills.

2012 *Splinter Cell: Blacklist* (Ubisoft)

Digic orchestrates another intense action sequence, this time bathed in the orange glow of dusk, adding a sense of sheen to the spectacle.

2012 *Castlevania: Lords of Shadow 2* (Konami)

Demonstrating impressive skin tones and lifelike textures, the announcement trailer for *Lords of Shadow 2* was a visual feast.

2012 *Assassin's Creed III* (Ubisoft)

As the blockbuster franchise continued to evolve, so too did Digic. It's improved environmental, hair and particle details contributed to a stunning cinematic sequence that transported players straight into the heart of the conflict.

2012 *Halo 4* (Microsoft)

Commissioned to create in-game cinematics for the gargantuan franchise, Digic highlights a clear brief, great communication and efficient timeframe as key factors in the success of the production.

2013 *Assassin's Creed IV* (Ubisoft)

As a starting point for modelling, Digic accumulated concepts and reference images from the period and used those to create an authentic representation of the era. Some impressive facial animation really set the scene.

2013 *Watch Dogs* (Ubisoft)

With various elemental details at work, Digic's trailer for Ubisoft's upcoming action game, *Watch Dogs*, delivers the most cinematic animated sequence in the company's illustrious history.



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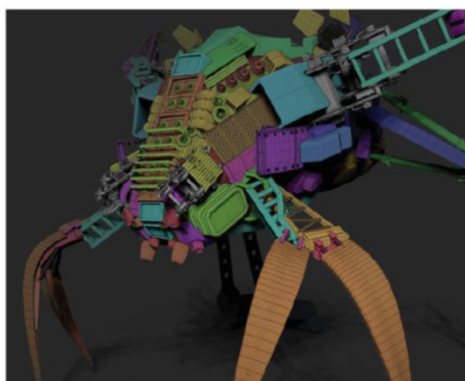
Website

www.andyjonescreative.com

Country USA

Software used ZBrush, KeyShot, Photoshop

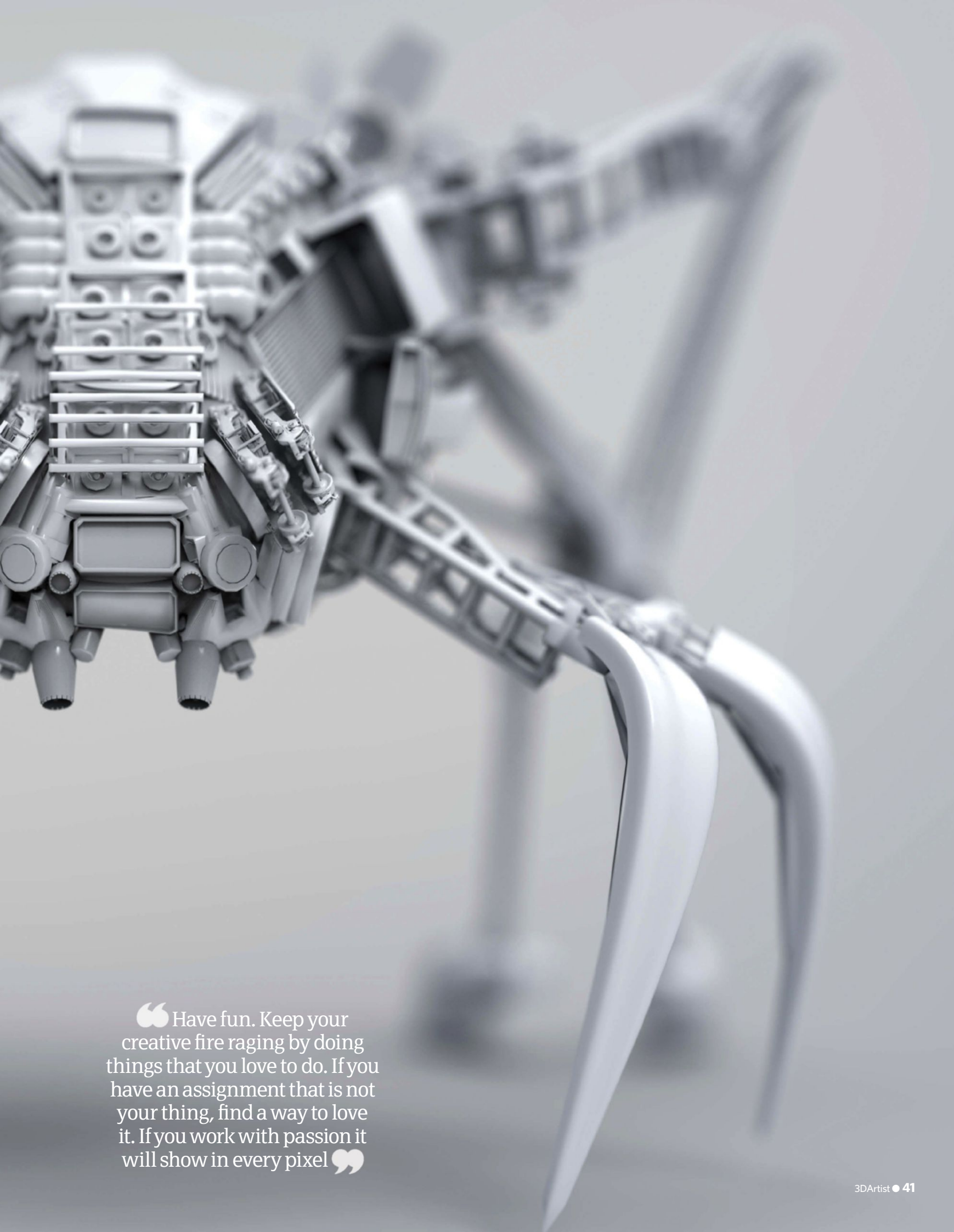
“You can help guide your viewer’s eyes through the piece if you give them some areas of relief, whether it’s from the detail, colour or forms. Think about what the most important aspects of your piece are and make sure they stand out”



Mech Sketch 2013

This was an explorative piece for me. I started with a rough idea of shape and silhouette. From there I blocked in large shapes with ZBrush’s DynaMesh tool, then worked on filling those shapes with detail. I tried to balance a sense of detail with a strong pose to really sell the concept.





“ Have fun. Keep your creative fire raging by doing things that you love to do. If you have an assignment that is not your thing, find a way to love it. If you work with passion it will show in every pixel ”

A high-quality digital illustration of three pirates standing on the deck of a ship. The pirate on the left is a Black man with a brown headband, wearing a dark vest with gold buckles and a green sash. The pirate in the center is a white man in a hooded blue and white coat with a red sash, holding a sword. The pirate on the right is a white man with a long black beard and a black pirate hat, wearing a dark vest and holding a sword. The background shows the ship's rigging and a clear blue sky.

MOVING PIXELS

*** THE ART OF VIDEOGAME ANIMATION ***

As videogame animation ploughs towards the next generation of consoles, how have the industry and its processes changed?



While the software and raw mechanics of CG film animation and its videogame equivalent might be very similar, the challenges surrounding the latter are vastly different. Where film enables a director to point, shoot and enjoy an audience stuck with the camera perspective, videogames often don't have that luxury. Game animation needs to look right, move well and feel great from any angle. Plus, with the next-generation of consoles looking to enable even more visual fidelity, these challenges are only going to grow even tougher.

The biggest gaming projects are as complicated as big-budget movies, but require much broader skill sets. Just look at the latest blockbuster on PS3, *The Last of Us*; a multi-million-dollar, full-scale project that requires micro-level detail in its subtle animation blends, all the way up to full motion-capture performance work using real actors. It's an almighty undertaking that's by no means uncommon.

This is a multi-faceted world, too. There's obviously character animation, the bread-and-butter of any videogame movement, which is usually handled through motion capture and blending. Beyond that, though, there are countless incidental animations that many gamers would never even think of, from user interface animation to background movement. This is where a great animator really pays his or her dues.

3D Artist spoke with three animators in different sectors of the industry to see just how the often-misunderstood world of game animation is changing. We chatted to Georgia Arena, an animator at breakout British studio Mind Candy (www.mindcandy.com), the team behind the wildly popular global phenomenon that is *Moshi Monsters*, among others.

Next, we have Nicholas Rodgers from long-standing UK team Frontier Developments (www.frontier.co.uk). He has worked on projects ranging from kids' games to complex sci-fi worlds, his experience bridging the gap between small indie gaming and large-scale studio work.

Finally, Jonathan Cooper heads up all animation at one of the biggest studios in the world, Ubisoft Montreal (www.ubi.com/enca), responsible for *Assassin's Creed*, *Far Cry* and the forthcoming *Watch Dogs*, among countless others. His experience dealing with huge projects (upwards of 600 people on a team) and subsidiary studios gives a fascinating insight into the challenges a modern videogame animator faces when working on a blockbuster.

Moving pixels

* Interviewees *



Jonathan Cooper

Company
Ubisoft Montreal

Location Canada

Key projects
Assassin's Creed III,
Watch Dogs



Nicholas Rodgers

Company
Frontier

Location UK

Key projects
Kinectimals,
LostWinds



Giorgia Arena

Company
Mind Candy

Location UK

Key projects
Moshi Monsters

TOOLS OF THE TRADE

No matter what the scale of the project, everything has to start with raw data, software knowledge and technique. "Depending on what kind of animation they're working on, and sometimes based simply on their preference, our animators work in either MotionBuilder or 3ds Max's Biped animation system." Explains Jonathan Cooper, who oversees the work of many teams at Ubisoft Montreal. "In-game animation is done mostly in the latter, as we find it the quickest way to see results.

"More motion capture-reliant actions, such as a fight system, will briefly pass through MotionBuilder to set up the scene before being torn apart then rebuilt with an animator's eye in Biped," continues Cooper. "All cinematic cut-scenes are created in MotionBuilder for two reasons. First, the way the rendering engine works enables a much faster frame rate when working on scenes with multiple hi-res characters with many bones in them - something essential for quick iteration. Second, because the Story Mode editor enables us to quickly and

easily assemble then edit all the elements, such as cameras, characters and audio, that make up a cut-scene. Having all these elements at our disposal enables animators to have complete control over how the cinematic sequence is played in the engine. More iteration time enables even more polished results."

Giorgia Arena has a slightly different take on proceedings, given that she works on much smaller projects with a lighter bandwidth requirement. "As I'm working for mobile games, I don't use the latest technologies. At the moment I'm working with Maya, but I don't necessarily think it's the software that makes the difference."

But what about the mid-range projects? Nicholas Rodgers talks through his day-to-day workflow at Frontier. "Currently I'm using 3ds Max as my main 3D package. Other studios might use Maya or XSI, but whichever you choose that's where the bulk of the animation work gets done. Most customise 3ds Max with a whole bunch of in-house scripts for everything from storing and managing poses to updating rigs and batch-exporting the scenes. In addition to this, we have an in-house animation blend tree software to enable our animators to have greater control over the animation when it goes into the game. These tools let you lay all your animations out like a flow diagram and decide what animations should play when, how they blend from one to the other and even let you layer multiple animations over one another to add greater detail." However, like Arena, it's not all about the tech. "Tea is also an important tool that mustn't be overlooked," Rodgers adds.

These might be the tools of 2013, but even in the past ten years game animation has changed so much that it's almost unrecognisable, with new technology constantly shifting boundaries. 2D art was the norm in the 80s and 90s, but 3D animation became the dominant style in the late 90s. With the advent of polygon-driven gaming, so too came motion-capture, used at first in sports games but soon responsible for almost every type of human character animation in big-budget games, as Cooper explains. "The biggest change has been the widespread adoption of motion capture as not only a production-friendly method of generating movement systems, but also adding an extra level of consistency and believability to characters in sequences.

"Working with actors has always been one of the most fun and human-centric elements of my job," Cooper adds. "Even so, improving technology and the demands on the artistry of animators, so as to retain as much of the subtleties of their performance as possible, is a constant challenge."



The next generation is poised to present even more believability to gamers and more challenges to artists

CAPTURE THE MOMENT

This challenge that mocap presents is something Rodgers can relate to as well. "I've used a lot of mocap over the years and even worn the Lycra suit myself a few times! The way that you use motion capture in games can vary a great deal from project to project. When you're using mocap for cinematics you can pretty much capture the whole performance similar to how you would video it, but when you want to use it for creating in-game animations you need to consider how you'll have to author that footage to work in-game," he explains.

"For instance if you were capturing a whole bunch of different runs in various directions, in order for them to work in-game you'd have to make sure that they covered the same amount of distance in every run, started on the same foot, took the same amount of footsteps and that all the start and end poses match the poses they were coming in and out of. Sometimes the style of the game you're animating for requires you to push the motion way past what the actor originally performed. In that instance you would use the mocap as a base to hand-key much stronger poses and timings in over the top. You'll see this a lot in fighting games, where the original capture might feel too soft when in-game."

"I've wholeheartedly adopted motion-capture since my initial explorations with it almost a decade ago and have used it in a

major way in every project since then," adds Cooper. "However, my real focus is in how good the characters look and feel. I will use whatever method best gets me there. I was initially a bit mocap crazy – requesting that the animators stay as true as possible to the original mocap look and feel with all the imperfections it brings – but over the years have realised that it's our job as animators to add to everything we see. Exaggerating and enhancing everything, from timing and posing to facial details, ensures that the characters players see on-screen are larger than life – real life simply isn't real enough!"

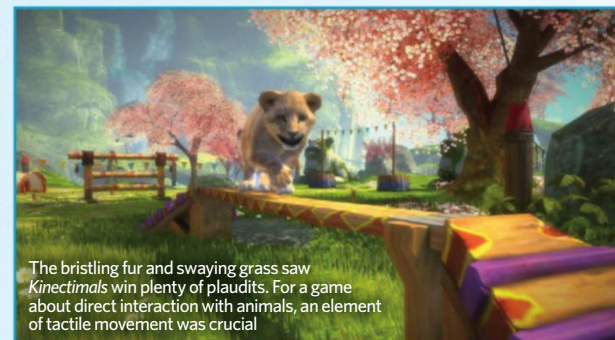
So is realism the ultimate goal for animators as technology and techniques improve? "I don't think it's about realism, but about being believable," explains Arena. "You can animate a monster with eight limbs playing a piano and still make it believable. I don't think the future is concerned with realism," Rodgers agrees: "I'd like to see all the advances in animation technology help us to achieve much more organic-feeling, unrealistic animation in games. If you try to make everything look like a film, something's always going to look a bit odd. However, if you tried to achieve a squashy, stretchy, snappy style, like in the Pixar films, you could play up to the nuances of videogames but maintain a consistently unique and interesting style."



If you've got children of a certain age then you've likely heard of Moshi Monsters. The characters' animation is simple but loveable, and is key to their popularity

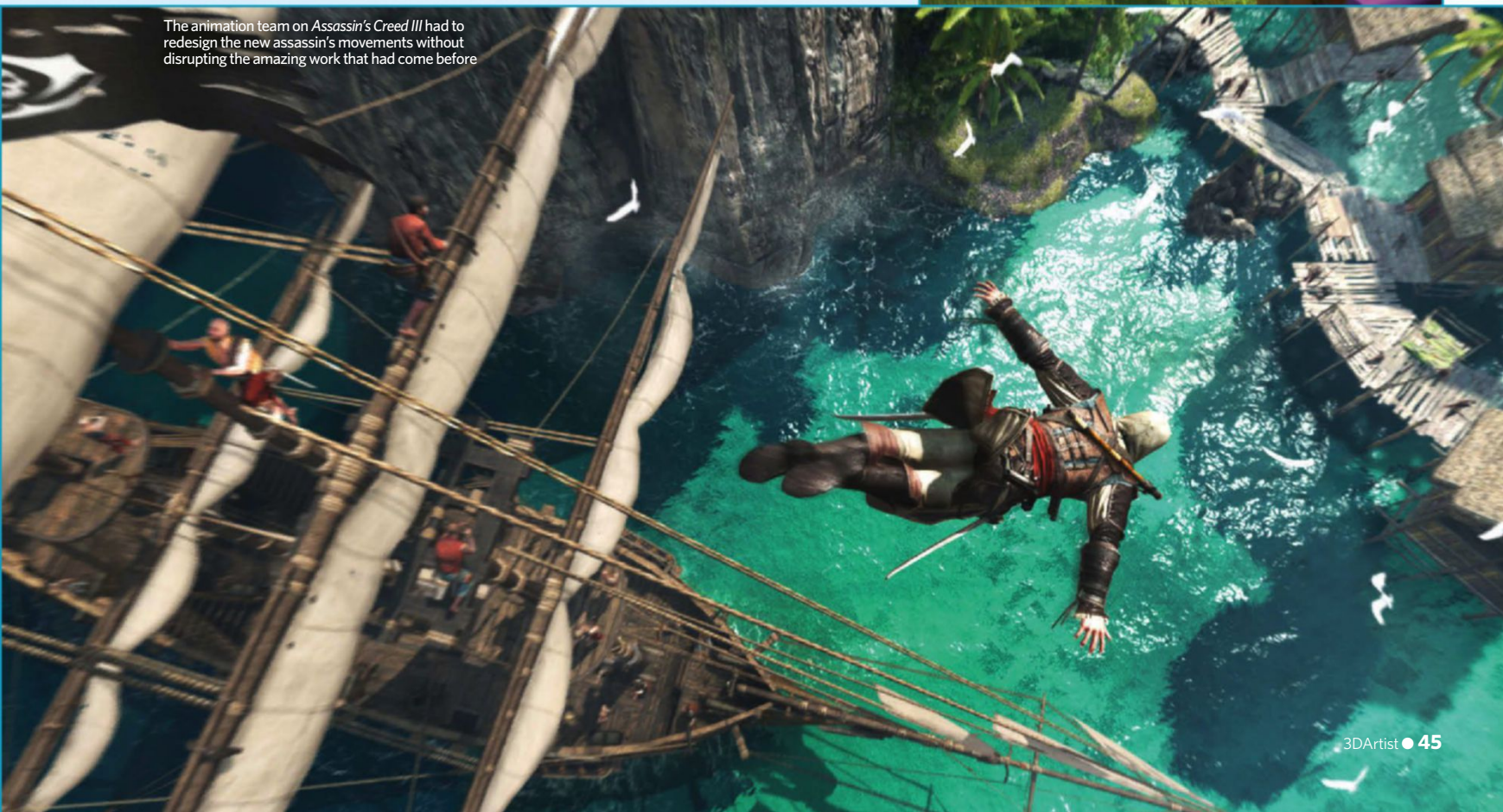
“I've used a lot of mocap over the years and even worn the Lycra suit myself a few times!”

Nicholas Rodgers, lead animator, Frontier Developments



The bristling fur and swaying grass saw *Kinectimals* win plenty of plaudits. For a game about direct interaction with animals, an element of tactile movement was crucial

The animation team on *Assassin's Creed III* had to redesign the new assassin's movements without disrupting the amazing work that had come before



Moving pixels

CHALLENGE IN MOTION

"What we're striving for, in my opinion, is believability," Cooper adds. "One avenue to achieve this is realism. However, as suggested this comes with its own problems in terms of making certain issues we currently accept with videogame animation more noticeable, such as unnatural weight-shifts and changes in momentum to name but a few.

"A better and more general approach is to break down as many of the disconnects players have between what they want to do and the actions of their on-screen persona. Reaction times are key, but usually come at the expense of fluidity. We have ways of tackling this now, involving a greater reliance on physical simulations and better integration of motion – both of which still heavily rely on the skills of an animator.

"In terms of pure believability in cinematic cut-scenes related to acting and facial performance, I still believe our biggest challenge is not in terms of technology, but in terms of storytelling and drama. However, we're very much learning how to best deliver this in an interactive medium. Sometimes it feels that every new game is breaking new ground in that area, so it's a very exciting time for animators to be in this industry," Cooper explains.

It's always interesting to hear about any professional's biggest career challenges, but when it's an animator, sometimes the toughest jobs are the ones you wouldn't notice – movements so subtle that you would need an animator's eye to even realise how much of a challenge they must have been. Cooper explains: "By far, the biggest challenge was creating Connor Kenway, the protagonist in *Assassin's Creed III*. The initial mandate when starting out was to completely revitalise the movement of the assassin, which already had a high standard set in the previous games.

"Additionally, because the assassin was already an established character that players know and love, we had the extra challenge of changing everything, but at the same time keeping consistency. As such, we looked for chances to bring new style to the combat, navigation and assassinations, while still retaining the trademark weight and fluidity that the series is known for.

"However, I didn't simply want to replace animations and end up with the same game. We reworked many of the systems underneath and added new physics technology to not only increase the visual fidelity, but also make Connor feel better under the player's control. We ended up improving every system in the game and added many more to provide players with one of the most rounded and capable characters of any action-adventure game."

For Rodgers, Shadow, the dog in *Dead to Rights: Retribution*, proved a challenge. "He was this huge, wolf-like monster of a dog that had to be able to grab enemies and throw them around all over the place, so there was a lot of weight transferal to consider when animating him. It wasn't the sort of animation you could film yourself acting out," he explains.



Ubisoft Montreal's next major release is *Watch Dogs*, which has been credited for its realistic animation



A horse is already a challenge, but one that can be controlled by the player even more so

* Crowning achievement *

"I'd say the thing I'm still most proud of to this day is the *Mass Effect* conversation system," Cooper tells us, referring to his time working with EA. "We had the challenge of delivering over 80,000 potential lines of dialogue (the equivalent of four novels or 15 movie screenplays' worth) in an interactive manner while also raising the visual fidelity of facial acting, at the time, in videogames. While the sequenced gestures and systemic facial performances may look a little robotic now, what we created stood the test of time for the two following games in the trilogy and I believe ushered in a new standard in interactive narrative delivered in a cinematic manner, with many players becoming increasingly attached to their own personal Commander Shepard as their choices unfold as a unique story. This, in my opinion, is the ultimate goal of videogame animators – to create memorable characters that deliver personal stories for players as we better realise the true potential of our uniquely interactive medium."



The facial animation in 2007's *Mass Effect* was incredibly impressive for RPGs at the time



“It feels that every new game is breaking new ground in storytelling, so it’s a very exciting time for animators to be in this industry”

Jonathan Cooper, animation director, Ubisoft Montreal

“Your demo reel is the primary way to land a job. It’s the standard by which you’re measured”

Jonathan Cooper, animation director,
Ubisoft Montreal



PRACTISE ALWAYS MAKES PERFECT

With game development becoming an increasingly lucrative and sought-after career, there are fewer opportunities to break into the industry. There is hope though, but it’s going to take work, as Arena tells us. “Watch everything. Watch movies, watch TV shows, watch cartoons, watch people in real life. The software is not so important, in my opinion, it’s all about observing and practising.”

“There are a lot more online references and blogs than when I was studying,” adds Cooper. “I’d suggest the best way to start is to compare where the bar is set by other students around the world, not just in your classroom. Additionally, starting your own blog is a great way to interact with other animators around the world, not to mention being a great avenue to showcase your work. Ultimately, your demo reel is the primary way to land a job in the industry, as it’s the standard by which you’re measured and the only real way for a prospective employer to see your talent before they work with you.”

“As for the quality of your reel, that will be up to your own talents and hard work, but I can certainly suggest the contents. The game animation demo reel should consist primarily of game-like sequences and cycles, ideally moving through an environment or in combat with another character. Acting sequences are now standard and a great way to show your

understanding of performance and character, as well as breaking up your reel in an entertaining manner.”

What if you’re truly starting from scratch, though? Gone are the days of the flipbook and pen – in order to get a head-start in this industry, you’ll need to focus your attention on practical and pragmatic measures, as well as get as much time on actual animation rigs as possible.

“I’d recommend that anyone thinking of getting into animation professionally should start by studying the fundamentals of animation first and going from there,” Rodgers explains. “Spend a lot of time doing basic exercises, such as animating bouncing balls of different weights and consistencies, then build up to a full character rig. All those lessons you learn at the start will be the foundation of all the character animation you do for the rest of your career.”

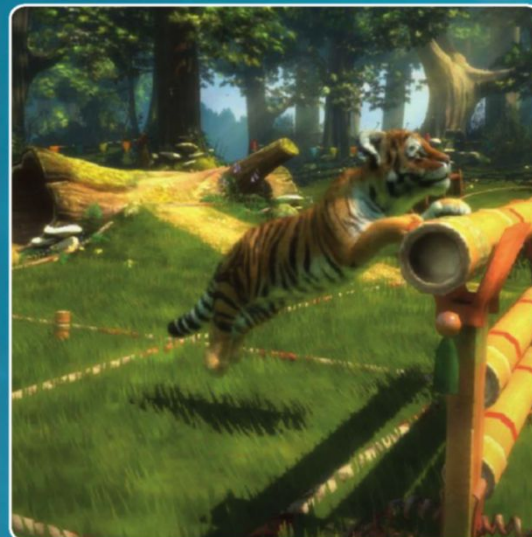
“There are some great free rigs available on the internet, so if you’re planning on specialising in animation I’d recommend downloading one of these and start putting together some showreel pieces,” Rodgers continues. “Ensure your work demonstrates a strong understanding of weight, posing, timing, that you know how to act, as well as how to make a character seem alive with its own internal thought processes.”

Rodgers concludes with some words of wisdom: “Your reel is the single most important thing in any application, so only show your very best work. You’re only as good as the worst animation on your reel!”

* Background artist *

We all know that character movement is the bread and butter of an animator’s job, but there’s a huge amount of background and set-piece animations that would rarely get a mention in a traditional game review.

So, what has Rodgers worked on that a layman would never notice? “All sorts of things that you’d probably never thought an animator would have done!” he says. “I’ve had to animate bridges falling apart, stage lights moving around, flags flapping in the wind... all kinds of little details that go into the environment. It sounds like dull work, but secretly one of my favourite jobs is filling an environment with tons of little animations that just bring the level to life. Having an animator’s touch on something as simple as a door opening and closing can really help add a bit of character to an otherwise ordinary action.”



The eye’s drawn to the main character in any game, but it’s the background movement that helps bring the whole scene to life



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With the Disc

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Artist info



Jonathan Cooper

Personal portfolio site
www.gameanim.com

Location Canada

Software used
MotionBuilder

Expertise Making interactive characters and worlds ever more believable

Master blend cycles in MotionBuilder

Assassin Sprint 2012

“Here we will learn how to create the Sprint Impulsion acceleration cycle, an animation that captures the Assassins’ free spirit”

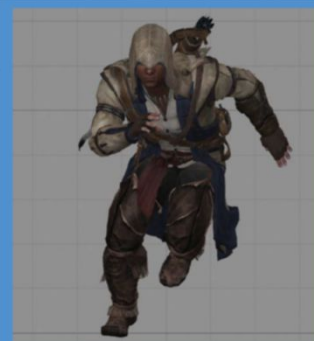
Jonathan Cooper is an animation art director at Ubisoft Montreal

To achieve *Assassin's Creed's* style of animation, we require a vast amount of animation cycles and transitions, bringing the assassin to life for even the simplest ground movement before we layer on cutting-edge technology such as reactive physics and IK.

Here you'll learn the process for making a flawless run cycle using motion capture, as well as a relatively quick and simple looping technique that can be applied to any kind of motion where seamless cycling is required. For this example we're using Autodesk MotionBuilder but the same techniques can be applied in any software that has the ability to blend sections of animation with one another.

Concept

Starting with a longer shot of a mocap actor running, we're going to be extracting a section in order to create a perfectly looping cycle. This can then be used for animating a game character, such as Connor Kenway.

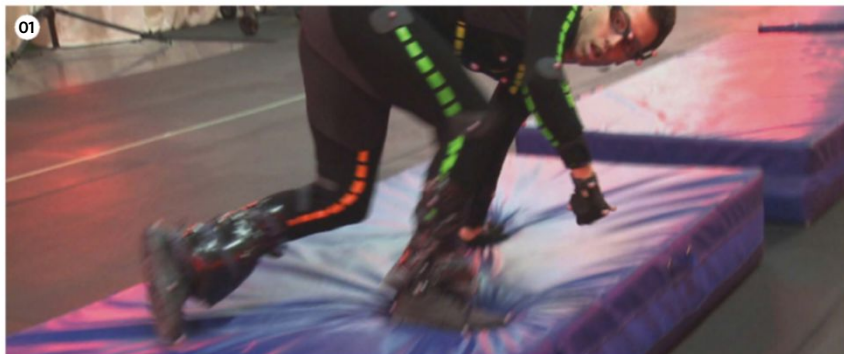




Direct your mocap

Great mocap starts with good acting, so get the most out of your actors

01 Inspire your actor's imagination Because the run cycle is perhaps the single most important animation in your game, ideally you should have several to choose from, covering a variety of attitudes, speeds and intensities. An essential tip here is not to ask an actor to simply run fast, but instead to give him or her visual direction in the form of: 'you are chasing after a stolen purse', or 'you are escaping a burning building' and so on. Employing visual references is more likely to provide a range of performances rather than simply adjusting the speed of the capture. You can even try tying weights to legs, if your actor is willing, or modifying the terrain for wildly varied motion styles.

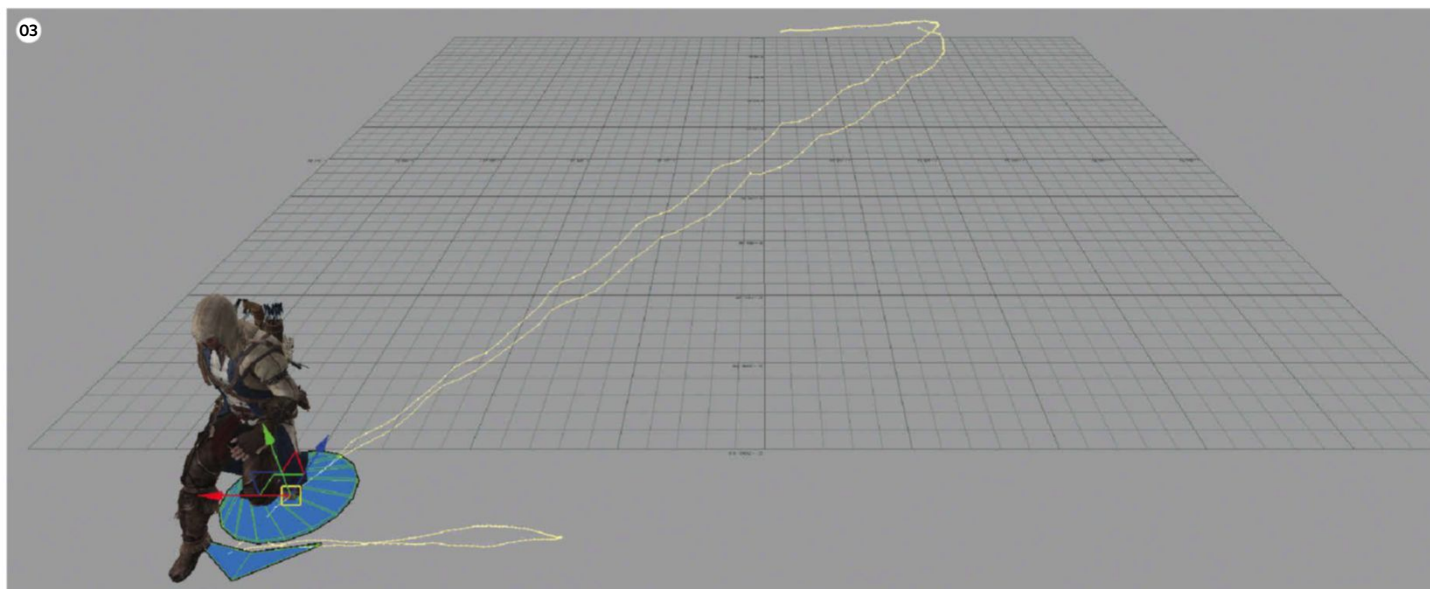


02 Be kind to the talent Don't leave high-energy actions like running to the end of the day's mocap recording, especially if your actor is more thespian than stuntman, or is not in the peak of physical condition. This will avoid fatigue creeping into your recordings. Additionally, starting with a quick burst of action is often a fun and energising way to start off a session. Remember, never criticise a performance, because actors are emotional beasts that require encouragement and inspiration to bring something amazing to their performances. The same can be said for animators in general.

03 Use all of the volume Unlike stationary actions, running requires you to maximise the use of the mocap volume – the space the cameras can record – as even large studios typically have only enough room for a dozen or so footsteps. Ensure your actors run diagonally across the volume for maximum recording distance, having them run out of the space before decelerating if possible. This minimises wastage of mocap data when on a budget and gives you as wide a range of footsteps to choose from as possible. However, It's easy to reposition and realign performances, as we shall see later.

Acting is for actors

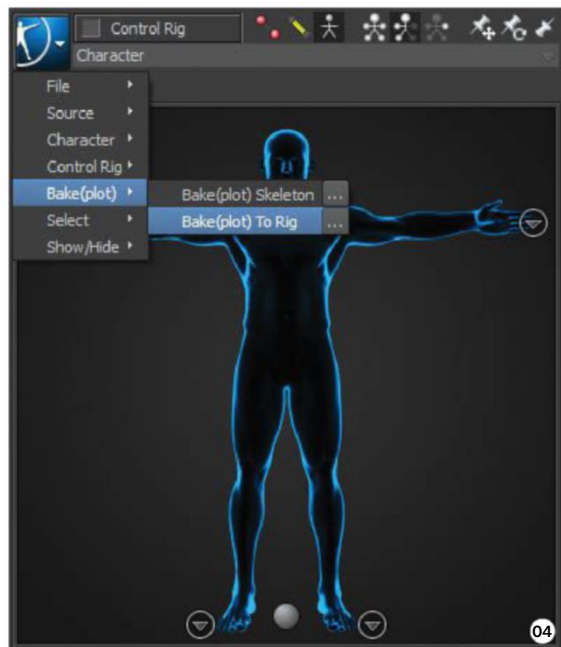
Often an animator's first approach when directing actors is to show the action themselves, but this is severely limiting. We pay actors a lot of money to bring their talents to our session, so why not use them? Performances are much better when an actor feels as though they are more involved in the process. The direction you provide should be broad enough to enable them to come up with their own interpretation of what you originally wanted. Nine times out of ten you will find that this will be much better than what you originally envisioned.



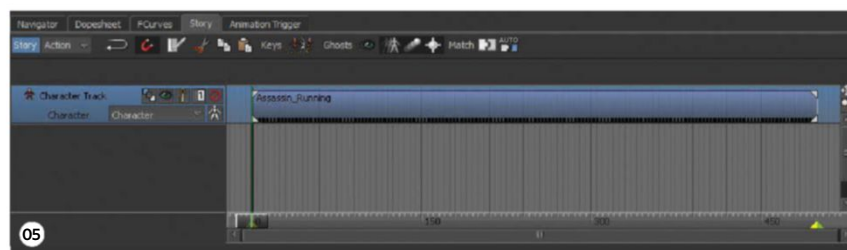


Set up your scene

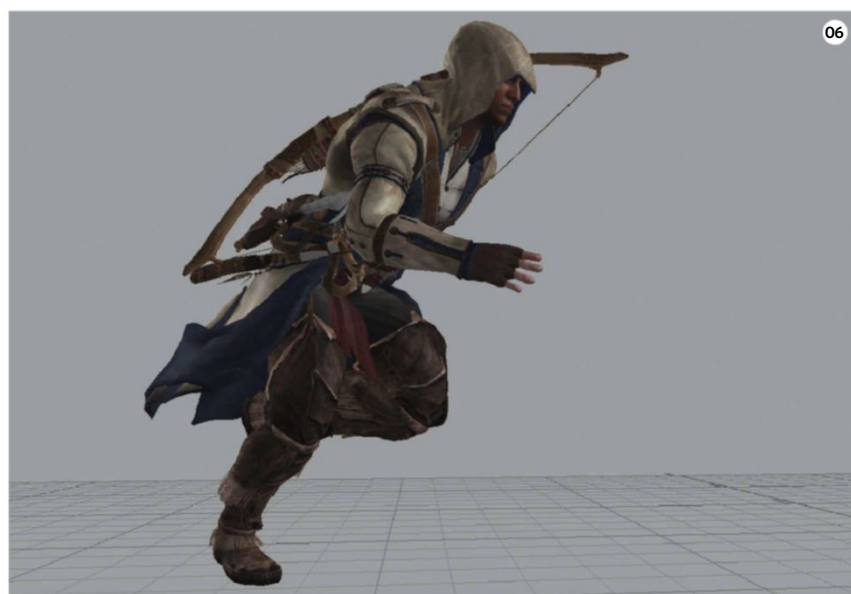
Before editing, it's important to ensure you have a cleanly set-up scene



04 Convert to the control rig Once your mocap is delivered, the real fun begins! Before we can edit anything in MotionBuilder, we must move the motion from the skeleton to the control rig. Do this by selecting Bake(plot)>Bake(plot) to Rig from the large blue character button. You may also want to deselect Constant Key Reducer in the Options box to retain maximum fidelity. Hit Ctrl+A to display the control rig in the viewport if it isn't visible already. Get into the habit of plotting between the rig and skeleton often, for an easy before/after comparison between changes.

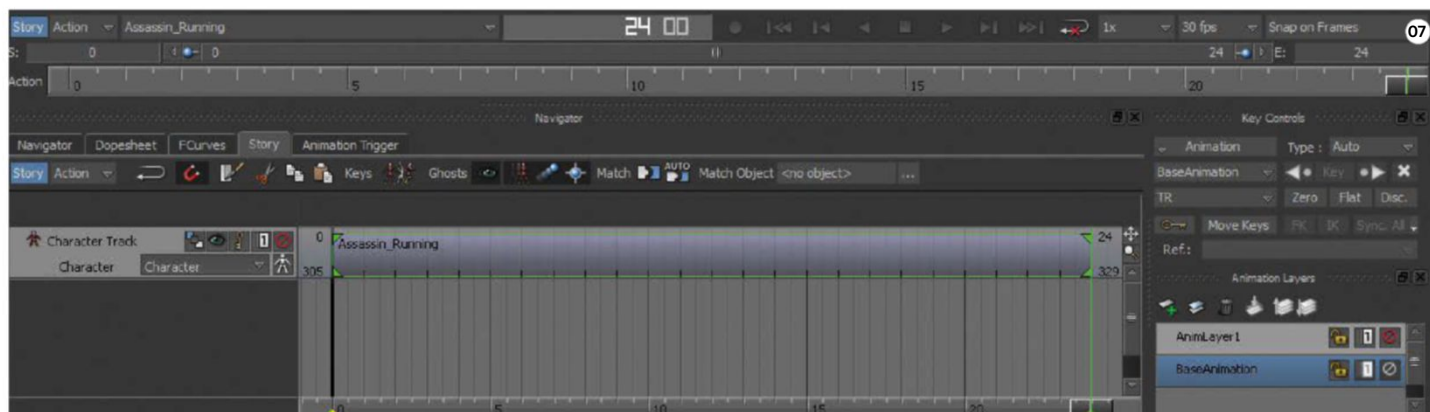


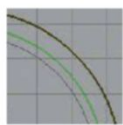
05 Enable the Story mode In order to broadly manipulate the motion, we'll use MotionBuilder's Story mode. While mostly used for editing cinematic cutscenes, Story mode is also a powerful blending tool. Open the Story tab in the Navigator and turn Story mode on if it isn't already. Right-click the space to the left of the timeline and choose Insert>Character Animation Track. Choose your character from the Character dropdown menu, then right-click in the empty timeline next to your newly created character track and select Insert Current Take.



06 Select a segment From the variety of examples, you're looking for one that best suits the personality of your character, keeping the rest as backups for other characters. You'll want to select a range of at least three steps that have a constant momentum. Ignore the acceleration and deceleration likely captured at the extents and avoid noticeable actions that would stand out in a repetitive loop. Using the Assassin_Run.FBX file we'll drag the edges of the clip to frames 305-329. You'll want to start and end cycles on a passing pose, with one leg up, to make similar poses most recognisable.

07 Scrub your animation Moving the clip back to zero, you can make scrubbing through keys more readable by zooming to the extents in the timeline. Do this by manually typing in the start/end times in the S: and E: boxes at either side of the timeline, as well as in the story by clicking on your clip and hitting F. Note that the Story timeline differs from the viewer's - the one that you're editing and one that you'll see when you press Play. You can jump back and forth one frame at a time by hitting Ctrl, then the left/right arrow keys.





Refine and repair

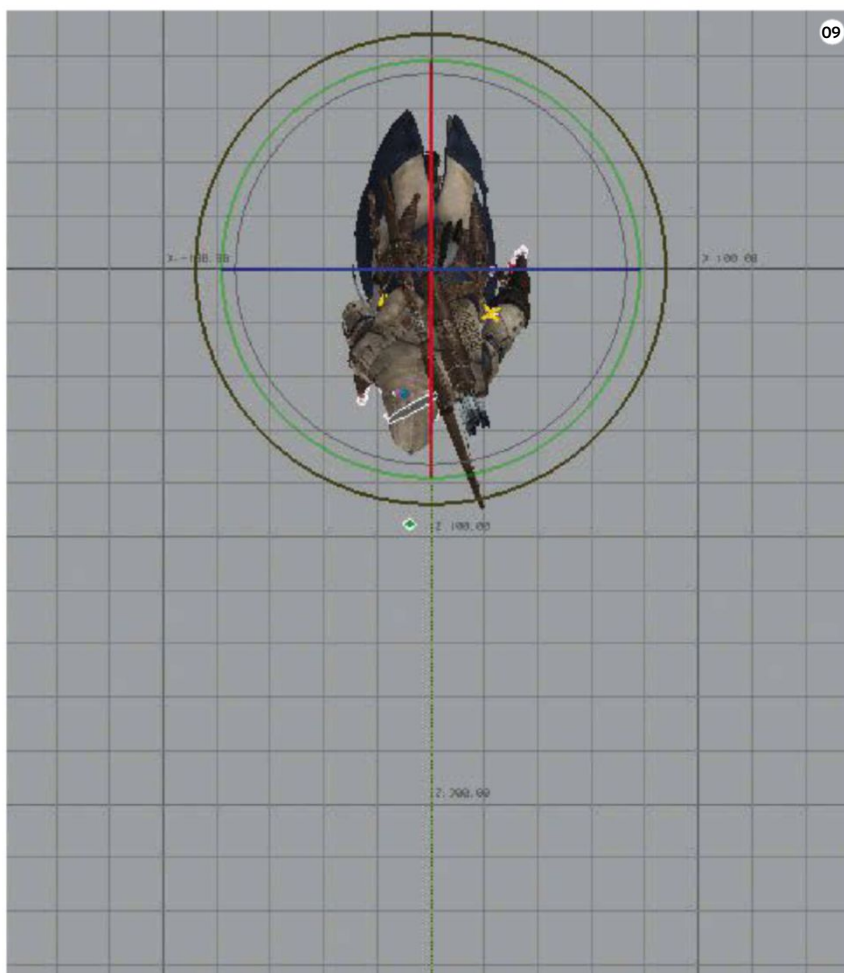
Clean up your clips and locate the ideal join

08 Clean up your scene With the clip at zero, notice that the numbers above and below it are out of sync. The top numbers are scene-based and the bottom are internal to the clip, which can cause issues on earlier versions of MotionBuilder when copying and pasting clips. Plot to the rig by right-clicking it and selecting Plot Whole Scene To Current Take. Right-click and delete your original Story clip and plot back from the rig to the Story tab once more. This resets the clip's local timeline and is a good habit to get into to better understand the real length of clips when you move them around. The Global In/Out indicator is the clip's position in the scene, whereas the Local In/Out setting is local to the clip.

09 Align to an axis Now that you have isolated what you want and because we captured the motion at an angle, we must align to an axis to make the looping workable. You can edit the position and rotation by clicking on the Show/Hide Ghost (eye) button in your character track. With the clip highlighted, you should now see a green line that represents your character's travelling motion. On the first frame of your range, select the Translation tool and enter '0.00' into the X,Y and Z fields. Now select Rotation tool and manually rotate the orientation to have the green line best match the Z axis. The Top view, via Ctrl+T, is the best angle to rotate to the axis. Hit Ctrl+E to return to the Perspective view.

Rapid iteration is key

Working in this manner to quickly create cycles enables us to see them where it counts – in the game engine. An animation is never done until it's fully playing and blending in real-time with all the other cycles and transitions. Only then can we tell whether the action is good enough and fits the character's personality. Videogame animators often have many animations being worked on at once and make adjustments before exporting, review while playing, then rinse and repeat in this manner until the game not only looks good but feels good with the controller in our hands.



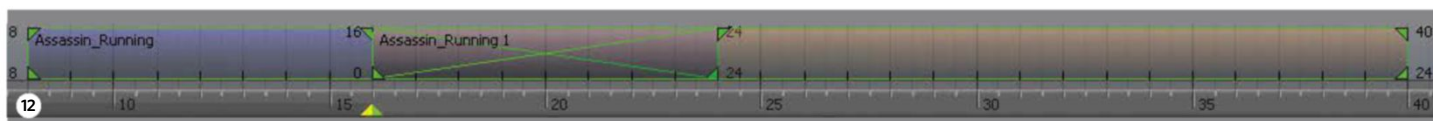
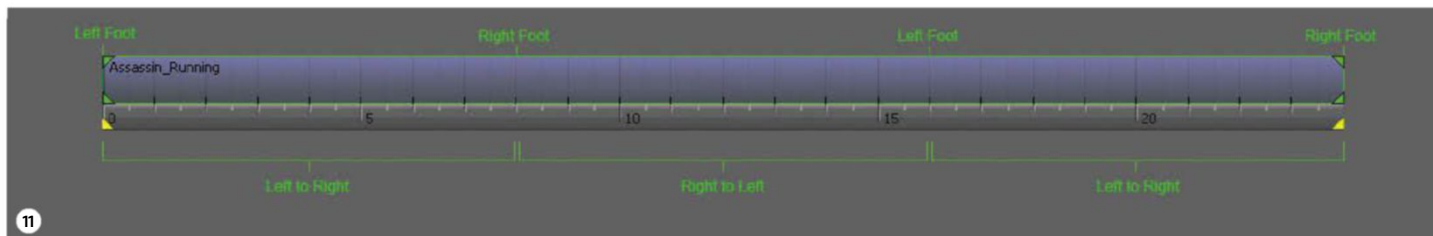
10 Find the best join

This is the key element of what we are trying to achieve, making the join seamless and unnoticeable. It's important to identify two complete footstep actions – not just single key poses – that are most similar. In our example we chose only three steps, so notice the first and third steps are the two similar actions. We will be using the latter two as the basis for our cycle. This means that frame 8 will then be our starting pose. Here we've identified the second passing pose as our best join frame.



Blend the motion

The crux of this process is choosing to match motions rather than poses



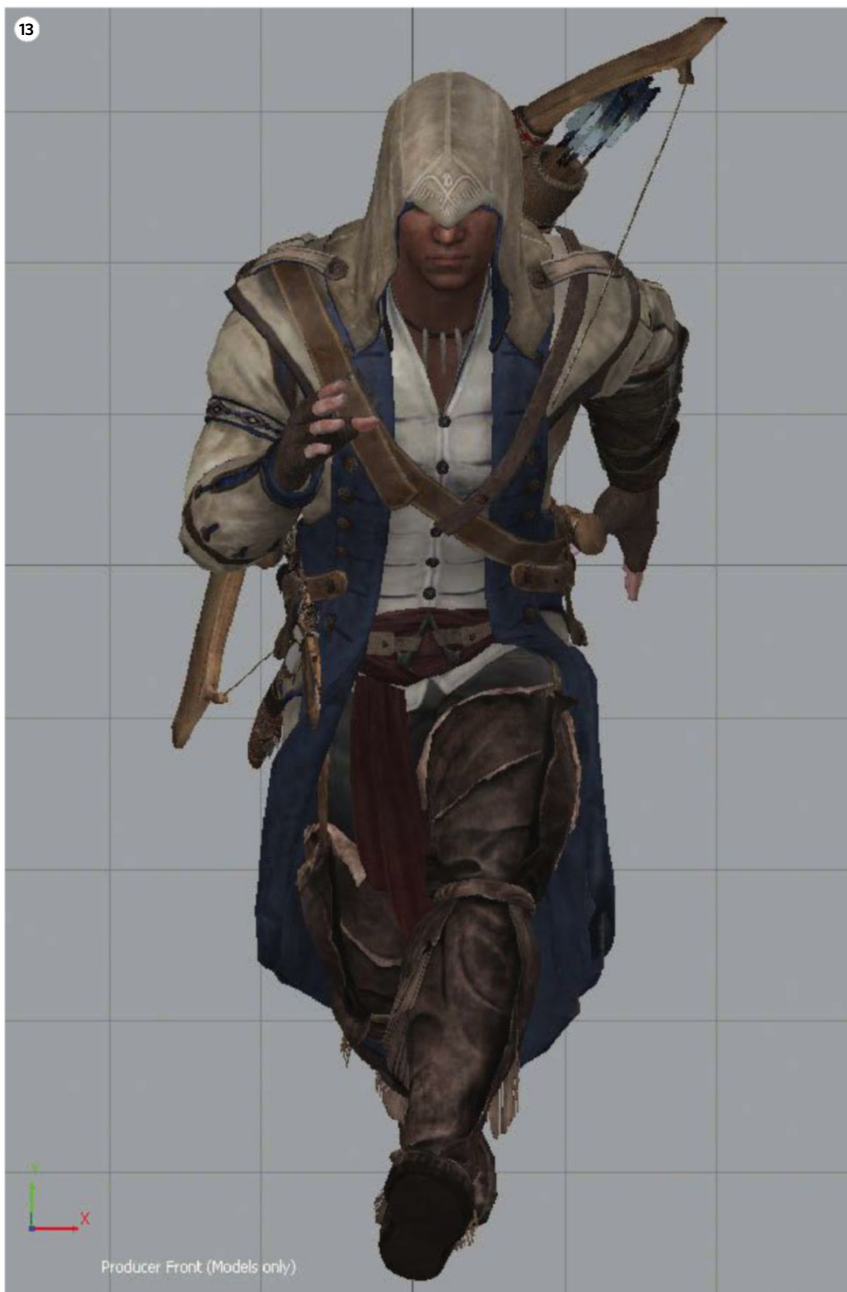
11 Loop the footstep Now we are going to blend back across one full step to ensure the looping motion is seamless, with the momentum of every body part retaining constant velocity throughout. We need to avoid the noticeable hitch that would occur if we simply pose-matched the first and last frames. What we're essentially doing here is, over the duration of the final footstep, blending back into the keys before the starting footstep, so we end our cycle at exactly the same pose as the start, with all the same momentum as the first frame. In our three steps, there are two similar left-to-right actions we can blend across.

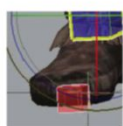
12 Blend the motion back onto itself With passing-pose 2 (frame 8) as our desired start frame, shrink the clip start to reflect this. Now right-click the clip, select Copy, move the timeline slider to exactly after the clip, right-click the track and select Paste. We now have two identical clips immediately following one another. Ignoring forward movement for a second, jump into the Front view via Ctrl+F. Select the second clip and drag its start half-way across the original. The X shape in the Story tab shows the original clip blending back across the keys prior to its first frame.

13 Adjust the blend duration Now set the timeline to be the length of the first clip only, (8-24). Ensure looping is enabled via the Loop button to the right of Play and hit Play. You now have a seamless loop. Play around with how long you blend back across the cycle to itself. Longer durations provide the most seamless results but will increase foot-sliding, whereas shorter durations are most stable but will increase the visibility of the join. Only use the Front view at this stage in order to see the seamless looping.

Cycling on the spot

Never remove the forward (Z axis) movement keys from your character's root/pelvis bone to see your character cycling on the spot, unless you want them to plane forward in an unnatural manner when you key them forward again. We don't move linearly in real life and instead push a little with each step in a rhythmic fashion. To see a stationary cycle, add a second layer and key the character backwards linearly, removing the layer again later if required for exporting into your game engine.





Close the loop

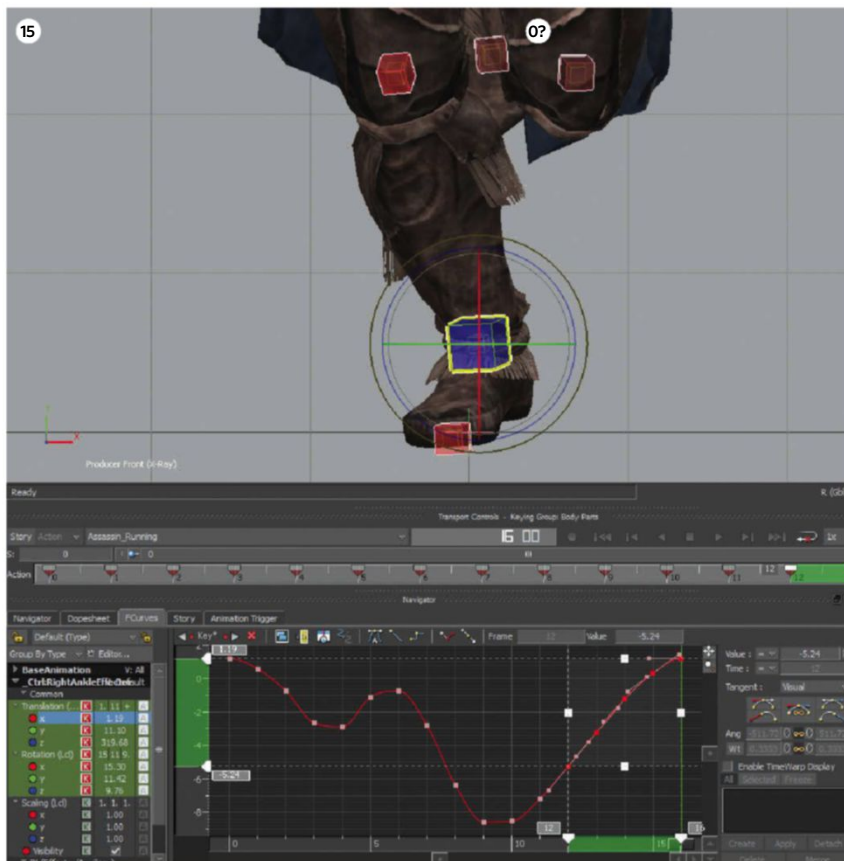
All that remains is to clean up the action to make it game-ready



14 Match the forward position Moving back to the Perspective view, we still have the issue of the clip returning to its starting forward position. Rectify this by selecting the Translation tool once more, entering the Side view via Ctrl+R and repositioning the second clip forwards or backwards until you reduce foot-sliding, which is bound to occur during the blend anyway. MotionBuilder has an Auto Match button in Story mode, but because we only want to match the forward position and not the up/down and left/right we can avoid it here. You can use the handy Ghost skeletons to line up your clips with minimal guesswork.



16 Improve the silhouette From this point onwards it's important to retain the cycling motion while editing. In *Assassin's Creed* everything we avoided in this tutorial, such as asymmetry, acceleration and deceleration, was re-created in the game engine to give personality and a sense of effort. How much work you have remaining depends on how close your original mocap was to the desired result, but now that we have a flawless cycle an animator is free to begin the real creative work of adding appeal and personality. Remember that while videogame animations need to look good from 360 degrees, runs are seen mostly from the rear.



15 Clean up the foot Plot from the Story to the rig and back while deleting old clips to produce one clean clip, which you should reposition back at the origin. Plot the Story edit onto the rig one last time and turn off Story mode. You'll likely have some lateral foot-sliding remaining that occurs across the blend, so eliminate this by modifying the offending keys, ensuring you don't change the initial or final pose. Cleaning up the minor foot-sliding is easy with MotionBuilder's FCurves. In the Front view, select the left foot controller and open the FCurves window in Navigator. Select the Translation X curve and modify the foot inwards before it lands.

Not just for running

This technique can be used for any cycling action you wish as long as you blend across two similarly large motions rather than two subtle ones. This masks the blend more effectively and reduces the foot-sliding and other cleanup work that follows. *Assassin's Creed* required many cycles to blend between in real-time – sometimes only for a few frames at a time. With this handy technique, your own projects can also have many quickly created cycles, but how creatively you use them is up to you!

17 Final adjustments Let's quickly raise the shoulders for a more heroic posture. Turn on AnimLayer1 and the AutoKey (key) buttons, as well as selecting Full Body in the Body Parts dropdown menu, all under the Key Controls tab. Next set Reach R to 100% for the head and shoulder controllers under the Character Controls in the upper right. This enables us to blanket keys across the entire animation unhindered. Finish off by pulling the shoulders up and back and tilting the head down slightly on your cycle's first frame for that classic *Assassin's Creed* look. Now we're ready for a first pass in the game engine – many more remain!



BRING YOUR CREATIVITY TO LIFE



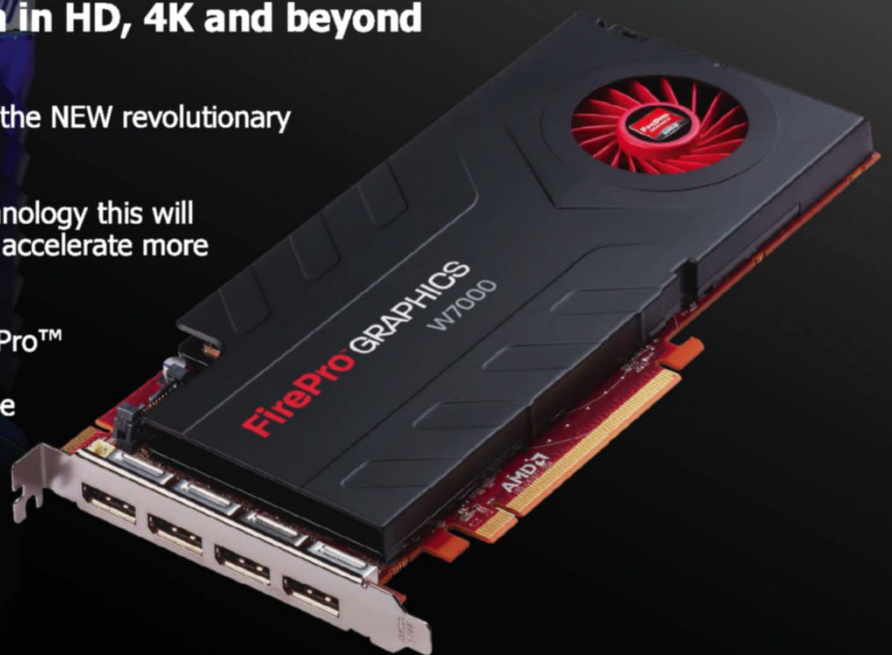
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Step by step

Easy-to-follow guides take you from concept to the final render

Artist info



Solomon W. Jagwe

Personal portfolio site
www.sowl.com

Location USA

Software used Faceware
Analyzer, Retargeter, 3ds Max

Expertise Building content for
game cinematics. Designing,
modelling and animating assets
for games and film

Create facial animation

Female Reporter 2013

“ Make convincing facial animation using Faceware Analyzer and Retargeter ”

Solomon W. Jagwe is an independent film director, and a freelance 3D modeller and animator

The following workflow covers the creation of facial animation for a hero character, with the goal of using her in a videogame cinematic.

In contemporary game making, facial animation really adds that extra punch that's going to get a player immersed in the game and interested in the story. However, as an independent game content-developer, I'm always looking for efficient ways to deliver client projects

that usually have tight deadlines and budgets to match. I first came across this solution by Faceware, which at the time was Image Metrics, through its Emily character tech demo. I was so impressed that I decided to contact Faceware so I could give its solutions a try.

The process is incredibly simple, and can be applied to any character that's going to be used in an FMV. We will cover each step here, detailing

exactly what the software can do. Brilliantly, both Faceware's Retargeter and Analyzer are free. You can also find Retargeter supplied with this issue of 3D Artist along with some helpful rigs.

The character depicted here is from my film Galiwango. The film is focused on raising awareness of the dangers faced by rangers protecting the last remaining mountain gorillas. You can learn more at www.galiwango.com.



Prepare your actor

Finalise your script and recruit a voice actor

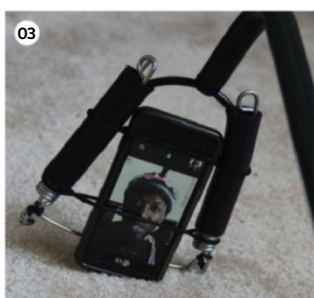
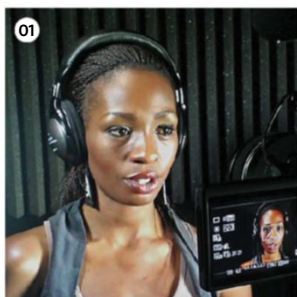
01 Write and record the voice Before you can start with the facial animation it's really important to have a script written with a voice actor in mind. If you have the budget, you can hire professional actors, but if like me this is your own game and you are on a limited budget, then it might help to solicit some volunteers or friends to help. Whatever you do, make sure the person can at least act passionately.

02 Organise your time A storyboard is of the utmost importance if you plan to save time in the recording studio. If the opening shot for your game cinematic is relatively short, then you might have some wiggle room. The volunteer voice acting team I used had limited time, so I had to make sure all my shots and dialogue were planned out in advance via a storyboard. I was also fortunate to receive a donation of free studio time by a friend who owns a recording studio. As a side note, always offer to buy lunch or breakfast, as hungry voice actors don't make for happy campers!

03 Footage and audio quality The footage that you record of the voice actor performing as your hero character doesn't have to be high quality, but it does help for it to be stable. You will save yourself the trouble of trying to line up shaky video in Faceware Analyzer if you make sure your voice actor stays relatively stable during the recording session. A head-mounted rig has the advantage of isolating the motion to only the face. Professional cameras offer that out of the box, but if you decide to make one for yourself, make sure the camera you use is mounted very well on a stable platform. There are cheap home solutions for capturing head-mounted footage, using your smartphone and a customised rig. You will also need to record a good-quality audio take for use in the final video. Nothing kills a cinematic faster than a horrible- or flaky-sounding dialogue, so invest the time to capture a good voice-acting track that you can sync later with the final video.

DIY head-mounted camera

You can build your own head-mounted camera without spending too much money. I made one from a few items lying around my apartment, with a bike helmet as the base and my smartphone as the camera for capturing the performance. The key is to do your best to think outside the box. You can find a step-by-step series of photos supplied with the cover disc, detailing how I created my own head-mounted camera.





With the Disc

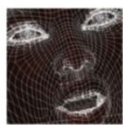
Tutorial files:

- Diy_Rig (sequence of images showing how to build your own head-mounted camera to capture facial performance)
- Videos revealing the basics of Analyzer and Retargeter
- Retargeter 3.2 and rigs

Learn how to

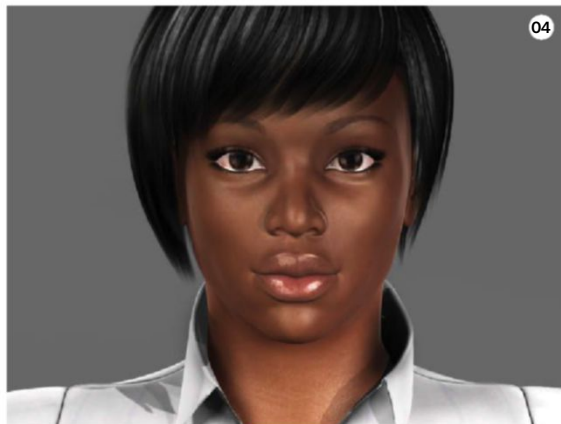
- ✓ Capture facial performance
- ✓ Prepare your 3D character for Analyzer
- ✓ Review voice actor footage
- ✓ Use processed video data in Faceware Retargeter 4.0



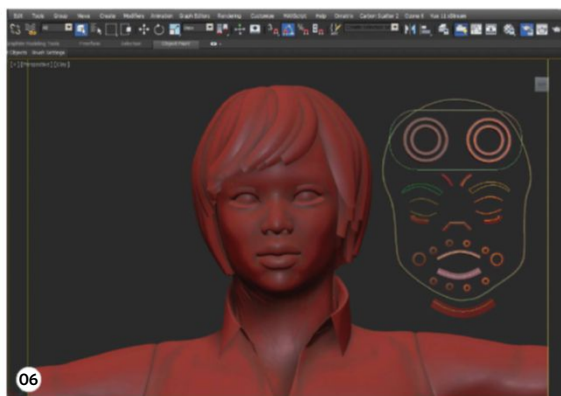


Prepare your 3D character for Faceware

Once your actor is ready, set up your 3D character equivalent



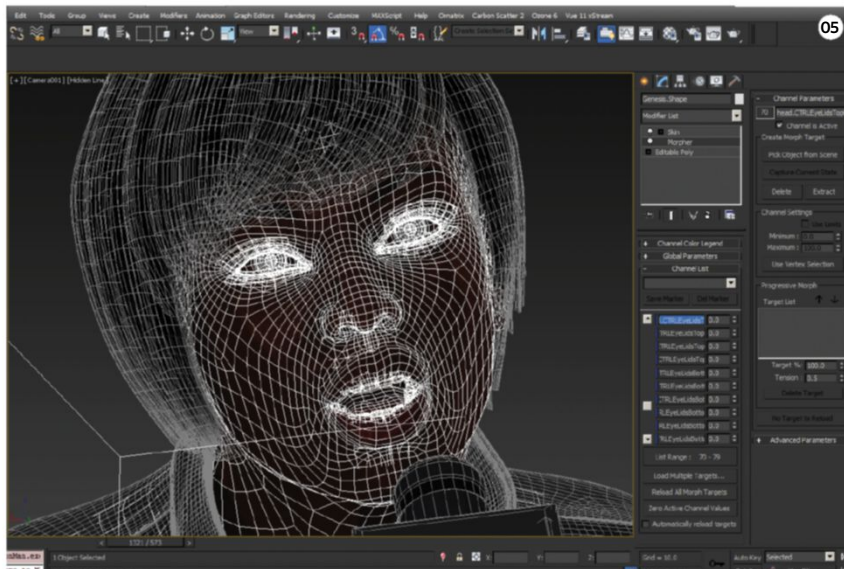
04 Model, texture and rig At this stage I'm assuming you've already fully modelled, textured and rigged your hero character in preparation for the animation. Faceware works both in Maya and 3ds Max, so you can build your character in either one of these software. With this issue you will find some 3ds Max and Maya facial rigs supplied by Faceware, which you can use to experiment.



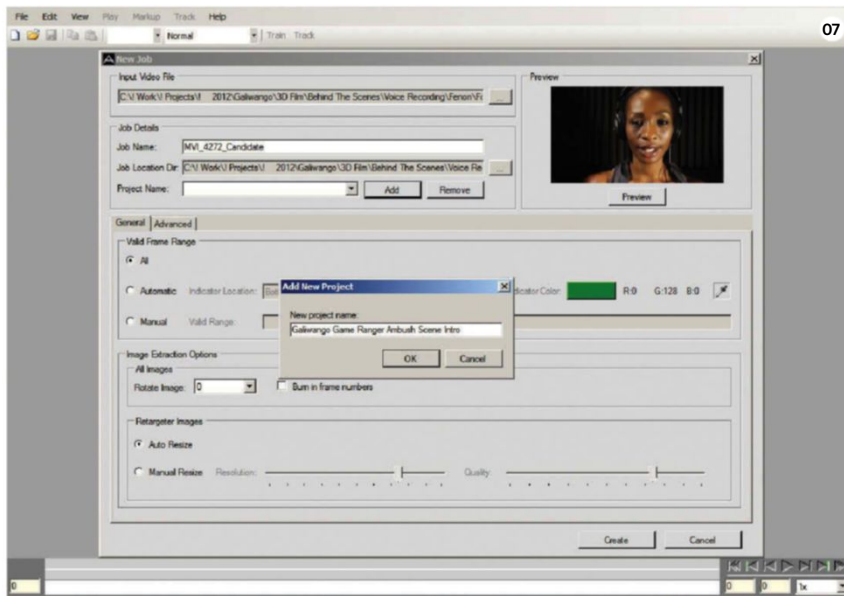
06 Begin facial rigging Now go to either 3ds Max or Maya to build up your character's facial rig. At this stage I often rely on splines drawn in the Front view to control the different Morphs, as well as Wire parameters to link up the Morphs with the custom facial rig. After the splines are linked up, you can then move to linking the facial rig to the Retargeter software. You can follow the process of setting up a character with Faceware in 3ds Max by following the video supplied with this issue. The method isn't too dissimilar from working in Maya, so you can also apply it there.

Analysing voice acting video

What I have found to be really neat about Faceware is that there is no need for markers on the face of the voice actor. The data is analysed purely from the video supplied. After capturing the video you simply train your model by moving points intelligently to tell the software where the nose, eyes, lips and eyebrows are, over a range of frames. Then you can just sit back and let the software's tracking capability do the heavy lifting. Easy!



05 Use Morphs and blendShapes You also need to have your character prepared with Morphs in 3ds Max or blendShapes in Maya. You can be as elaborate as you want with the Morphs, but keep in mind that this will make for more work when you are connecting them to the facial rig. You should spend time focusing on the mouth, eyes, brows, jaw, cheeks, lips, ears and nose. These can have varying numbers of Morphs, but the ones that really need the most detail are the mouth and eyes, which will be the main facial features that your audience will be paying attention to. They must look right if the audience is going to connect to your character.



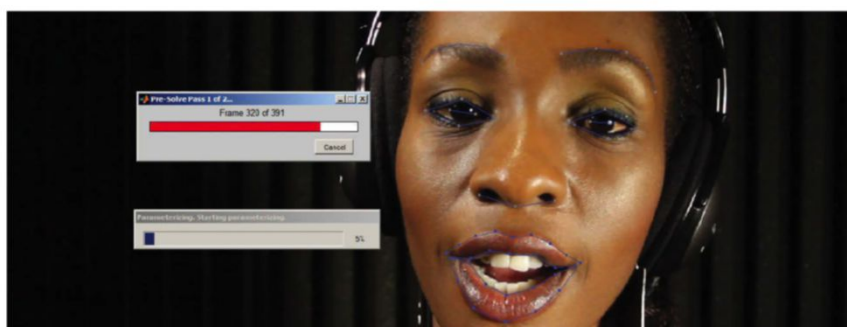
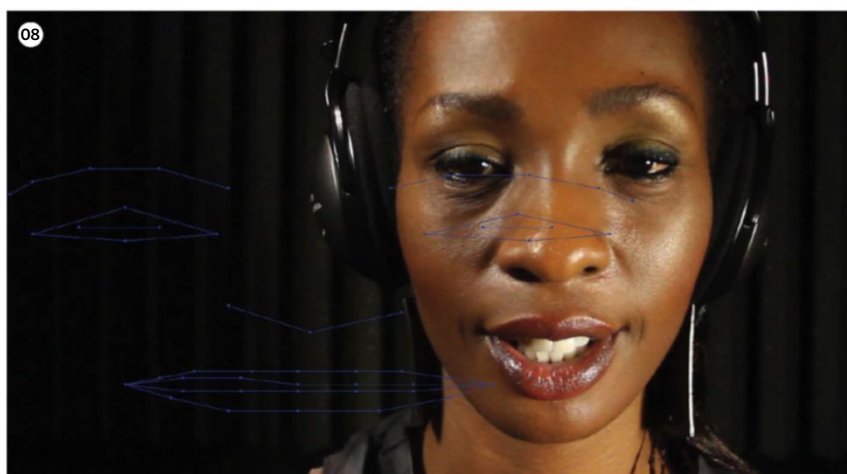
07 Start a new job in Analyzer Now that you have your voice actor footage and hero 3D character ready, it's time to start a new job in Faceware's Analyzer. This part is pretty straightforward and a step-by-step video is available with the issue for you to follow. Essentially you need to make sure your original footage is rendered in a QuickTime MOV format and the file size should be relatively small. Analyzer will be extracting frames from the video and Retargeter will need to play them back in the Maya or 3ds Max interface, so it's better you get the loading issues out of the way by providing an optimised video file. Analyzer also supports MP4 and several other video formats. Again, the entire process for starting a new job can be seen in detail in a video guide supplied with this issue.



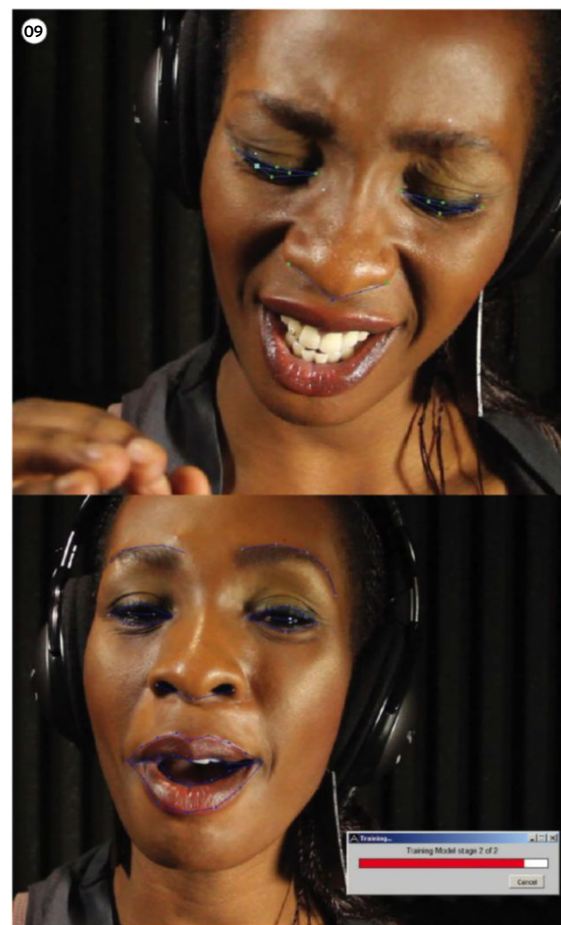
Move to Analyzer

Review and track footage without the need for markers

08 Mark up points The first thing we need to do in Analyzer is to mark up, which simply means moving the landmarks or points into position on the face and creating what are referred to as training frames. A training frame is a frame in your video that you have chosen as an extreme shape that your voice actor has made. You can mark this frame up by moving the points that identify the eyes, nose, mouth and eyebrows to fit the actor's face. A detailed video discussing the process of marking up and creating training frames can be found supplied with the issue.



09 Train the model This step takes the frames that you have set and builds a statistical model of the voice actor's appearance and performance. What this means is that the software goes through and looks at the three groups you marked up – the eyes, brows and mouth – for a given range of frames, or the entire video you loaded for analysing. The software then prepares it for tracking.



10 Start tracking Next you need to take the information from the statistical model and use it to fill the in-between frames of the video. You can repeat the tracking, training and marking-up stages as many times as you want until you have achieved a nice result that you're happy with. Now we can move to the final stage: parameterisation.

11 Parameterise Before you can move forward with this final step in Analyzer, you will need to set up an account with Faceware that you can use to purchase time for parameterisation. This is a cloud-based service that takes the final tracking results and runs them through the Faceware proprietary algorithm. This takes the data and returns an IMPD file that can then be used in Retargeter. The IMPD file will be placed in the folder location where you saved your new job at the beginning. Take a look at the Faceware parameterisation video supplied with this issue, if you come across any hitches with this stage.

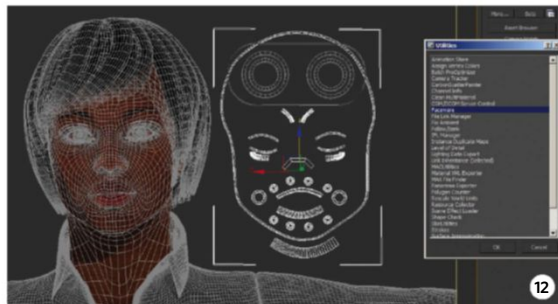


Finish with Retargeter

Bring your 3D character to life

Step-by-step videos offered with the disc

Several videos that cover these steps in detail are supplied with this issue of 3D Artist. You can follow along with these as you create your facial animations for the cinematic characters. This tutorial focuses on a concept game cinematic, but the resulting facial animation can also be used for in-game cutscenes, similar to the ones you may have seen in *Crysis 3* or *Assassin's Creed*. In fact, over 45 other videogame titles have enjoyed the versatility and ease-of-use that Faceware's Analyzer and Retargeter software offers. You can check out the list of titles here: www.facewaretech.com/projects.



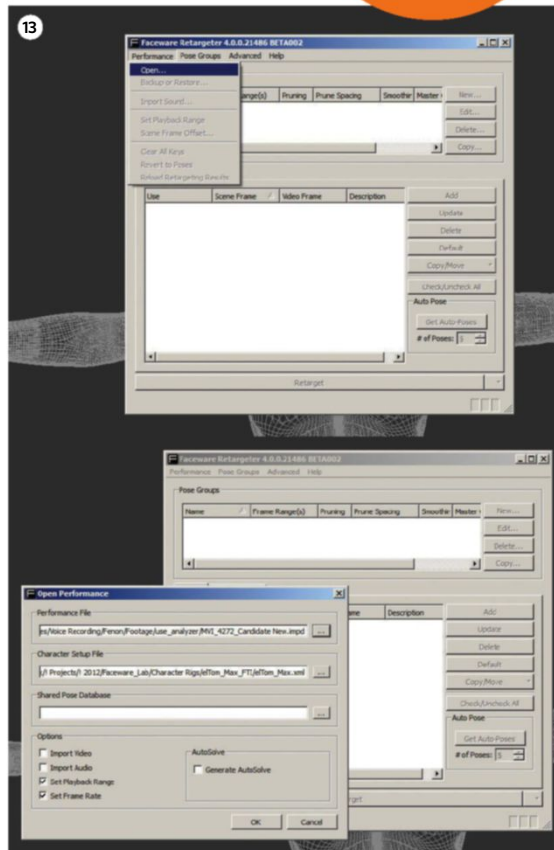
12 Get started with Retargeter This is where you set up your pose groups, your character and your performance files with Retargeter so you can start animating. I used 3ds Max, so the following steps covering loading differ somewhat from Maya, but once Retargeter is loaded, the workflow is pretty much the same as in 3ds Max. At this stage, all the hard work that you put into your facial rig and the analysing of the voice actor performance comes full circle, because it all leads to this final step of facial animation.

13 Load Retargeter Click on your Utilities tab in 3ds Max, then select the More button to bring up the Utilities list and choose Faceware. In the past this used to be listed as Image Metrics FACEWARE, but in 3ds Max 2013 it simply appears as Faceware, so keep that in mind if you think it's not there. Click OK and it will show up at the bottom. Take a look at the Faceware Retargeter video supplied with this issue for a more detailed illustration.



14 New features in 4.0 unveiled Faceware has now introduced new features in Retargeter 4.0 that are going to make it easier for animators, especially those creating facial animations for games, to get to a starting point even faster than before. The new features include: Expression Sets, Auto Solve, Batch Functionality, Shared Poses and Tracking Visualization. Expression Sets deals with the study of universal expressions that every person uses when they move their face. Auto Solve takes those universal sets during the character-creation process and combines them with the processed data by Analyzer. This produces an automatic pass of animation, giving you a much more advanced starting point for each shot you work on. Take a look at the Faceware Retargeter 4.0 New Features video supplied with the issue, to get to grips with all the new options.

9 hours
creation time
Resolution:
3,000 x 3,800



15 Finalise and render Once you have input the animation time and are satisfied with the final look of your shots, you can then move to applying the full body motion, lighting and rendering the final cinematic. Faceware doesn't create the final animation for your game cinematic, but rather quickly provides you with a more polished animation point so you can focus on refining subtle details and bringing your character to life. You are then able to produce something that will draw your audience into your game, cutscene or FMV.

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Artist info



Jaehyup Keum

Website www.gamegraphicartist.com

Country Canada

Software used 3ds Max, ZBrush, Photoshop

Bio Jaehyup currently works as a senior character artist for Capcom game studio

Pilot 2013

This is a portrait of a female pilot for an imagined future jet fighter. As I currently work as a senior character artist at a Capcom game studio, developing characters like this is my profession.

“To make this believable I tried to think about functions. Most of the helmet is made from glass fiber-reinforced plastic for a clear and wide view, apart from the mech sections”

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Step by step

Easy-to-follow guides take you from concept to the final render

Artist info



Hasan Bajramovic

3DArtistonline

Username: hbajramovic

Personal portfolio site

www.hbajramovic.cgsociety.org

Country Bosnia and Herzegovina

Software used ZBrush, 3ds Max, V-Ray, Photoshop

Expertise High-resolution character texturing and sculpting

Professional ZBrush sculpts

Samurai 2013

“ Build a realistic samurai warrior with highly detailed armour ”

Hasan Bajramovic is a CG artist specialising in character work, from concept to texturing and rendering

Here I will showcase my design and creation workflow in ZBrush and 3ds Max. While sculpting the character from scratch in ZBrush I'll explain the workflow and techniques that I use on a daily basis. I'll cover the various ZBrush tools that can help with your creative process, such as ZRemesher, which can hugely speed up your topology work. You will also learn how simple techniques such as masking and extracting meshes from

existing tools can assist your workflow, as well how helpful primitive tools in ZBrush can be used to make some of the character's elements.

Last I'll explain how to set up lighting and rendering inside 3ds Max and V-Ray, as well as some shaders. We'll be forming all the armour in an unsymmetrical pose that might prove difficult for some, but a little patience and perseverance will carry you through to a great result.



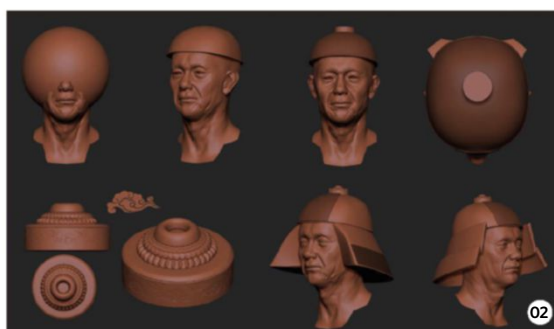
Sculpt the head and helmet

Start from the top and work down

01 Block in and sculpt the face Using an existing base mesh, block in the features and proportions that best suit your design. Good reference is key here, as it will help you when establishing the proportions of the sculpt. I can't stress just how important it is to make sure you set up the proportions correctly. I usually spend 90 per cent of my time blocking out major shapes, and 10 per cent of my time detailing.



02 Start on the helmet Append a Sphere tool to your sculpted head and slice it using the Clip brush. Move the resulting shape around a bit to match the shape of the skull. Now you can append a Cylinder tool and position it on top of the helmet. This is where the Radius Symmetry function comes in handy. You should subdivide your mesh and sculpt in all the details with the Clay brush. Details like embossed clouds can be added using a custom Alpha with a Standard brush. Form the lower part of the mask by appending another sphere and shape it with the Move and Clipping brushes. Now mask an area around it to make separate panels with the Extract tool.



Other types of knots

Alternative knots can be formed using ZSpheres and Adaptive Skin. I prefer to find good reference for these and you can even search for videos on YouTube to see how some of them are tied. Follow these steps and try to match the shape with your ZSpheres. Once this is done, activate Adaptive skin and if the knot has gaps you can use the MoveTopology and Inflat brushes in the Deformation palette.



03 Tie knots for the armour Next make a custom InsertMesh brush that you can use throughout the project for the knots. Start by selecting the Ring3d tool and adjust its SDivide and LDivide settings under the Initialize menu to something like 8 x 8. You don't want to have too many subdivisions on these rings, since there's going to be a lot of them. Turn the ring into a Polymesh and then drag out a straight Transpose Curve to make it straight. By holding Cmd/Ctrl and clicking on the middle circle of Transpose you can produce copies of the ring. Arrange these in a similar manner to the screenshot, then append a Cylinder3d tool and move it into position. Merge these into one tool and click the InsertMultiMesh button in the Brush menu.

With the Disc

Tutorial files:

- You'll find Hasan's custom IMM brushes that he uses to create knots and screws

Learn how to

- ✓ Sculpt a head to scale
- ✓ Make photorealistic and detailed armour
- ✓ Sculpt and tie knots
- ✓ Set up lighting and materials
- ✓ Prepare an expert render

Concept

I wanted to create a realistic samurai warrior wielding two swords. He has a dynamic yet calm stance typical of samurai demeanour.





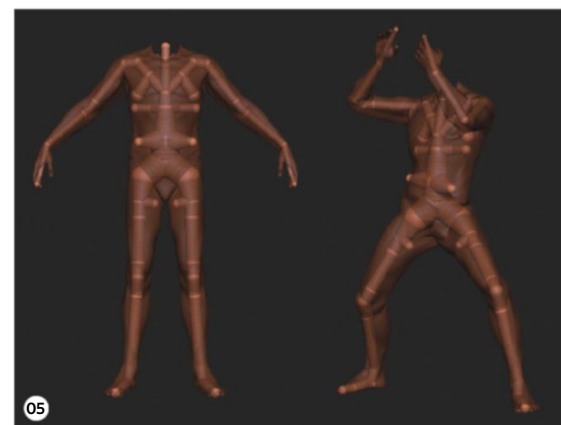
Construct the armour

Focus on shaping each element of the character's armour

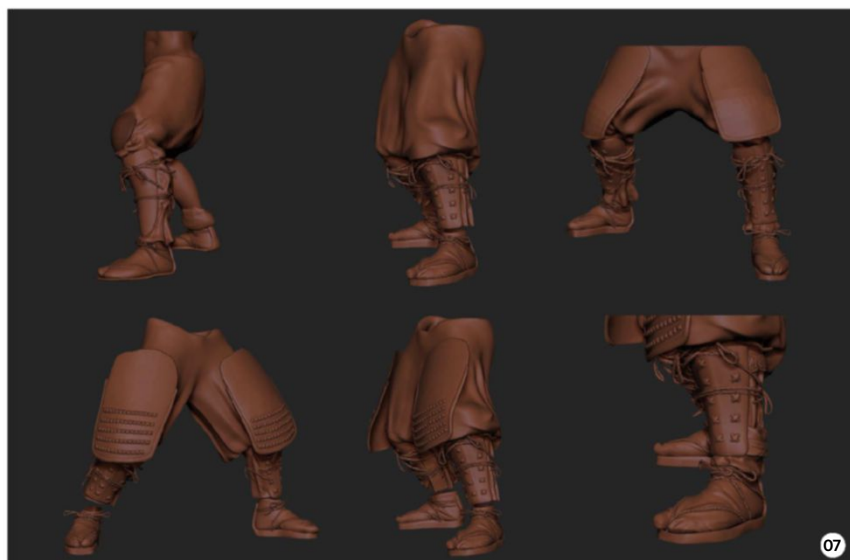


04 Sculpt the mempo (face mask)

Begin masking the parts of the face that we previously created. Once happy with the shape that you've achieved, extract the mask as a mesh by hitting the Extract button located in the SubTool palette. Now you have your basic form, enable DynaMesh and shape the mesh with the Move and TrimDynamic brush. You can then add some creases and dents with the DamStandard brush. I like to hit ClayPolish every now and then, since it polishes up the surface effectively. Once you're satisfied with the outcome, try to keep things optimised by activating Decimation Master and reducing the polycount on the mesh.



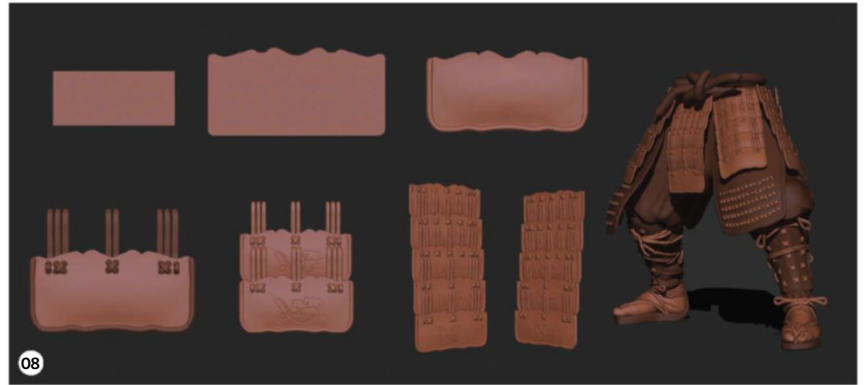
05 Pose the body You can pose the sculpted body using a combination of ZSphere rigging and Transpose masking. I personally like to combine both of these techniques. For the ZSphere rig, start off by selecting a ZSphere and loading up your mesh under the Rigging rollout. Once loaded, continue adding and linking ZSpheres until you create a basic skeleton. Once you're happy, click Bind Mesh and move ZSpheres into a decent position. Click Make Adaptive Skin to build the posed mesh and return to your tool. You can now complete some tweaks by masking, then applying Transpose and the Move brush.



06 Work on the lower body Just like in the previous steps, mask the legs of the character and extract them. Convert the extracted mesh to DynaMesh and move it around until you get the desired shape. After you're happy with the overall form, start adding some wrinkles and folds but don't overdo this, since you still need to create the armour around the legs. You can always return to this step and apply more details after sketching in all the leg armour. This way you will know where all the cloth compression is occurring.

07 Build the leg armour The leg armour is made using the same techniques as the previous steps: mask, extract, convert to DynaMesh and then block out the basic shape. When you're pleased with this element, use the IMM Knot brush that we created for use on the helmet to add some details to the armour. Add the ropes using the ZSphere technique from the beginning of the tutorial and apply some details to them using a DamStandard brush.

08 Add the missing lower body armour Since there are eight identical parts to this armour, we'll create only one and then position copies of it around the character. Begin by appending a Box tool and trimming it down to the correct shape. Grab the Move brush to rearrange the upper section and form the arcs seen in the screenshot. Once done, use the CurveTubeSnap brush to create the outer part of the pad. Add the cloud pattern with the Standard brush and a Rectangle stroke, then place knots with the custom Knot brush and copy the created shape five times with the Transpose tool. You can play with the pattern of the knots and arrange them in your own way. Now copy this SubTool eight times and place it around the thighs. Try to bend them a bit using the Transpose and Move brushes while masking certain areas off.



09 Build the torso armour The same method as described in the previous steps can be used for the section of armour covering the character's torso. Start by masking the body to create the base of the armour and move it around until you get the shape desired. You can repeat this step if you want to add more layers. Next, create another custom Knot brush, the same way we did in the previous steps, and use it to apply detail wherever you deem it necessary.

10 Attach armour to the arms Now mask out parts of the forearm and extract them, but be sure to leave an opening on the lower side. Using the TrimDynamic and Clipping brushes, make some tweaks to the extracted mesh and apply knots with the custom brush. Insert rivets by appending the Ring3d tool and positioning it accordingly. Next mask the upper part of the fist and go through the same steps until you get the correct shape. Append the chainmail (you can find an IMM Brush with it on the ZBrushCentral IMM Brush repository) to your model and move it around to match the shape of the folds. This can be tricky because of stretching and distortion, so take your time. You can add all the other details using a combination of these techniques.

11 Sculpt the sword Again, the same rules and techniques apply for this element. Begin by appending a Cylinder primitive for the handle, then add a small curvature to it with Move brush and mask it off to develop the pattern on it. Extract this and, with the MoveTopology brush, bring the pattern closer and make it overlap. Repeat the masking and extracting for other parts of the handle as well. For the hilt we can use Shadowbox and simply draw out the shape with masking tools. Append a box primitive and adjust its size so it looks similar to that of the blade. Now begin sculpting the blade with the TrimDynamic and Clipping brushes. Spend time getting the curvature of the blade to look just right.



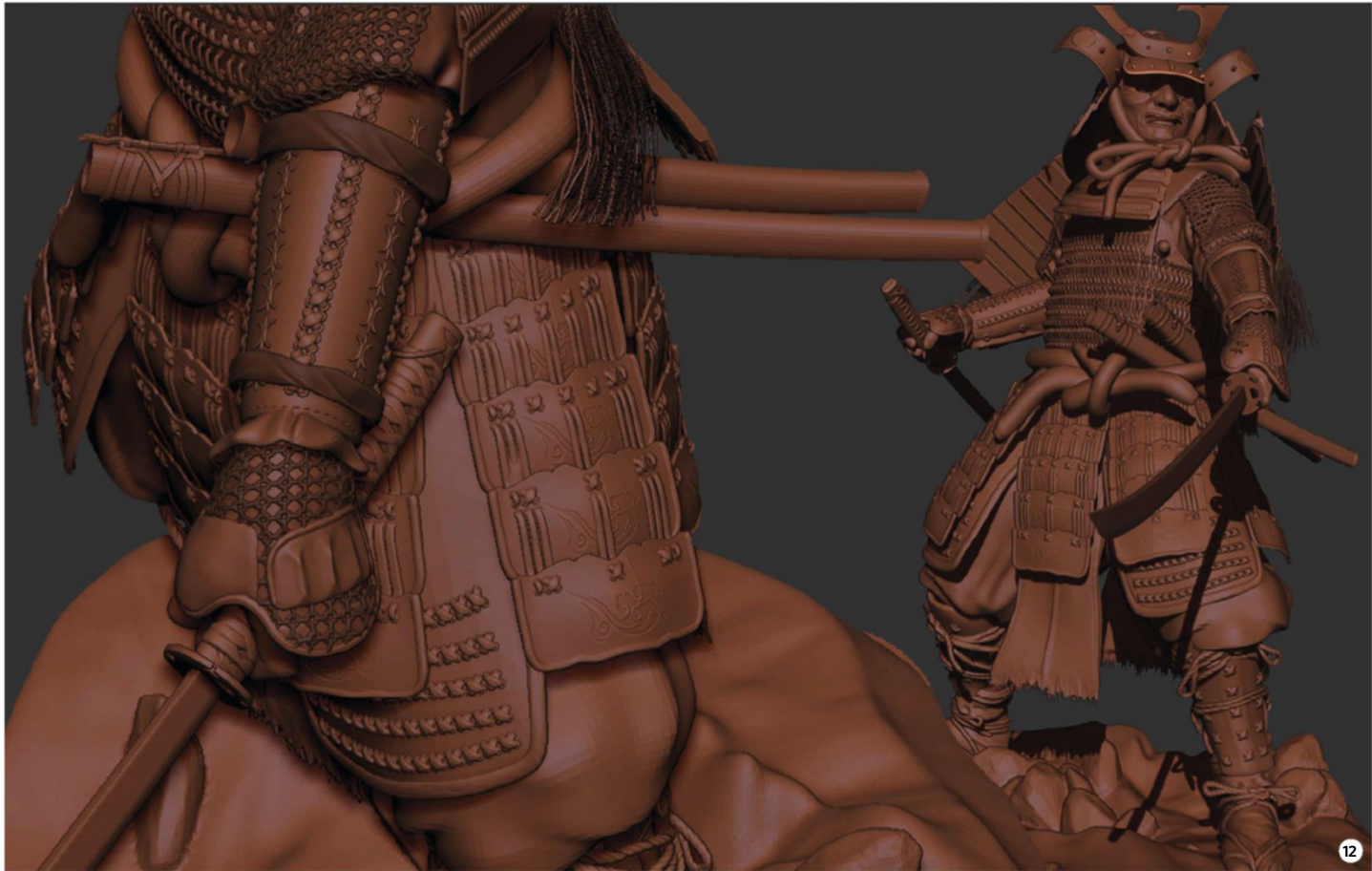
Don't be afraid to experiment

ZBrush is such a powerful software, but you shouldn't be afraid to experiment with its tools. All of the elements created in this tutorial can be made with a range of different techniques. Try to find the one that suits you best and don't let ZBrush scare you! Let your imagination run wild and play with all the tools. That's the best way to improve.



Review your work

Take a break and analyse what's been achieved



Try not to hide behind the small details

Details are always great, but it's never a positive thing to get distracted by high-frequency detail at the expense of basic form and shape. This can happen to all of us and it's something that we should try to resist. Practise sculpting human anatomy and forget about the high-frequency details, just get the basic shapes and volume right first. Try importing your work into Photoshop and flipping it horizontally to get a fresh look of your model. You can get a totally new outlook on your sculpt this way.

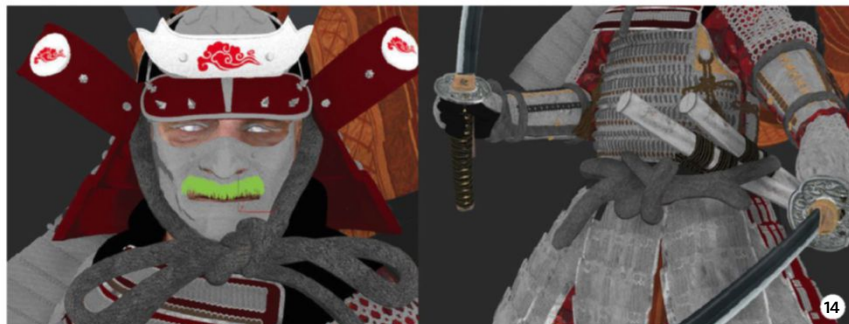
13 Topology and UVs Major parts of the sculpt can be retopologised using ZBrush's ZRemesher. All you have to do is select the SubTool, open the ZRemesher rollout and select the polycount that you want. Before hitting the ZRemesher button, duplicate your SubTool. This way you can project the details onto newly created topology. If you need more control over the edge flow, use the ZRemesherGuides brush on the mesh and create some guides. UVs are the easiest thing to create in ZBrush, just open the Plug-in menu and hit UV Master. You can then hit Unwrap and ZBrush will do the job for you. If the process requires better UVs, we can go in and tweak things manually, but for the purposes of this tutorial the results are more than acceptable.

12 Be critical At this stage don't be afraid to be your own worst critic. Have a look at the work you've done so far and make adjustments if needed. I do this all the time and you'll notice that I change things during the sculpting process. This is the main reason we're using ZBrush: it enables you to experiment and make flexible adjustments to a model.



Rendering and postproduction

Develop textures and finalise the model



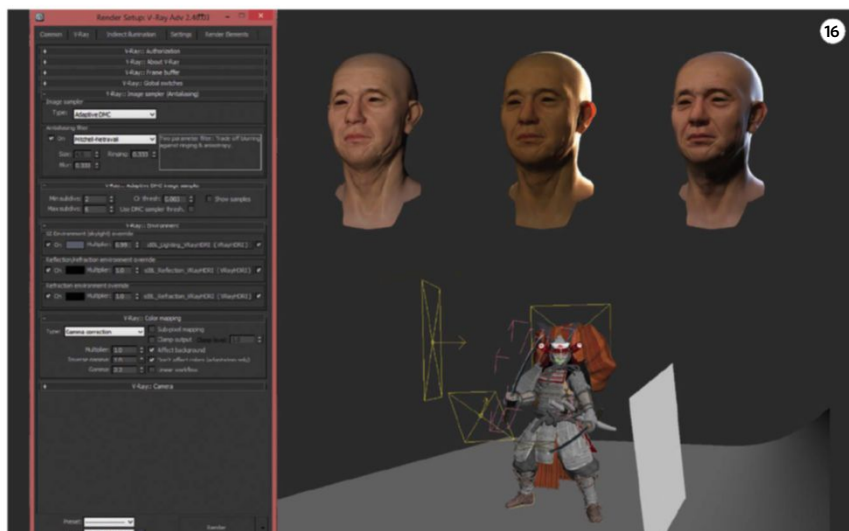
14 Make textures Create an account at <http://CGTextures.com>, if you don't have one already, and browse through its collection. Most of the textures there are tileable and you just have to load them up. Here you'll find textures for leather, metal scratches and other types of fabric. You can achieve great results by layering these with the Composite shader inside 3ds Max. For the face you can stick with ZBrush and build up the colour levels slowly. Remember, bony areas have a more yellowish tone. Other areas have a combination of purple and red tones. Use a Color Spray stroke and adjust the colour variation to your own taste. Now extract Normal and Displacement maps from ZBrush.



15 Set up your materials Create a V-RayMtl for each group of materials or fabrics being used. Load up all the textures that you created and adjust the Specular/Reflection values. You might also want to open some reference images when creating these. The key to creating good-looking materials is in simply observing your reference and experimenting with different values until you're happy. Samples of some of these materials can be seen in the screenshot.



16 Begin lighting and rendering For rendering we'll use 3ds Max and V-Ray, but the same principles can apply to every software out there. We'll create three V-Ray lights but any other area light could do the job. Position them similar to the screenshot and experiment with the Intensity settings until you achieve the results you desire. Assign V-Ray as the renderer and, under the V-Ray tab, go to the Environment rollout add some HDRI maps for added reflection. I usually go with Adaptive DMC 1x11. Now we can hit Render.



17 Final compositing For the last touches and compositing of your image, you can use Photoshop or any other application that enables you to retouch the image. Start by adding some adjustment layers and tweak the Levels of the final render. To bring out or tone down certain colours you can use the Selective Color adjustment layer. Also try adding some gradients with different blending modes and see what kind of results this gives you. Now is also a good time to go in and paint out any mistakes manually.

Final thoughts

It's a good idea to make iteration renders of your model. Try to build up all the materials one by one. Use free open-source HDRI maps to add great-looking reflections to your metal materials, as well as some environment lighting. Don't rush things, sleep on it and come back the next day to have a fresh look. Never be afraid to make adjustments in Photoshop and look at your renders as raw materials that need to be polished up.

“ If I were to go back and re-create the *Motorized Patriot*, I would have made his bind pose more rigid. He was built with bent arms and legs, which work fine for organic characters, but caused headaches for our animators when trying to do robotic animations at odd angles ”

Motorized Patriot 2013

This is a giant robotic George Washington with a Gatling gun named the Pepper-Mill. He is seen throughout many of the combat encounters in *BioShock Infinite* and is essentially a walking war machine created by the Founders, not only keep the city of Columbia safe, but also to spread the propaganda of the game's Founding Fathers.



I made this...
Incredible 3D artists take us behind their artwork

Artist info



Gavin Goulden

Website www.gavimage.com

Country USA

Software used 3ds Max, ZBrush

Bio Gavin is currently the lead character artist at Irrational Games in Boston. He specialises in rigging, texturing and sculpting

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Masterclass

Dave Scotland is a CG artist, compositor and lecturer. Here he shows you how to tag up your digital realm using 3ds Max and Photoshop

With the Disc

Tutorial files:

- One hour video tutorial
- 3ds Max files
- Tutorial screenshots

1 HOUR

VIDEO TUTORIAL
WITH THE DISC

Using a combination of 3D and 2D software you can re-create your own personalised graffiti designs

Create a graffiti design in 3ds Max

“ Learn how to use a range of digital tools to create a classic graffiti design in 3D space ”



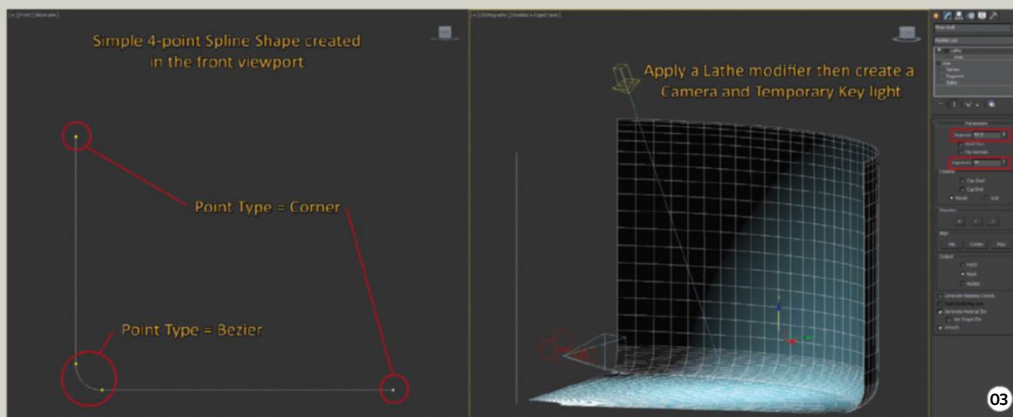
Over the next few steps you will learn how to build and render a 3D graffiti design using 3ds Max.

We will take a look at the various steps required for planning such a design and how to prepare font elements for the 3D work. We will create a virtual studio set for presenting our final render and to help position the design in 3D space. We'll then be able to build our graffiti design from scratch, using Shape objects, Primitives and Modifiers.

Once the main structure is complete, the fun can really start as we experiment with placing objects using a set perspective and simple lighting. We will then apply textures and tweak the lighting before rendering various scene passes using V-Ray. For the final step, we'll move to compositing our layers in Photoshop.



A wireframe of the 3D graffiti structure. By starting in 3ds Max and moving to Photoshop, we'll be able to add a number of powerful effects, such as Curves and Levels, for a stylised result



Build a signature tag...

01 Research graffiti styles and fonts

The best place to start a graffiti design is to jump online and begin gathering reference and inspiration. You will also need to source a font for your design. The web has many free font sites that feature graffiti styles. Once you locate some great fonts, install them into Windows for use in Photoshop and 3ds Max.

02 Form the composition

In Photoshop, use the fonts you have acquired to lay out some design ideas. You can also incorporate some extra elements using Shapes and the Pen tool. Apply just enough to use as a starting point. You'll only be able to fully define the spatial aspect of your design once you start moving your elements around in 3D space.

03 Create a virtual set

Make a simple, curved, floor-and-wall scenario to help give the viewer a sense that the graffiti is tangible or real. It's also important to include some basic lighting, including shadows. This will help to define the design in 3D space. To build the floor and wall, make a

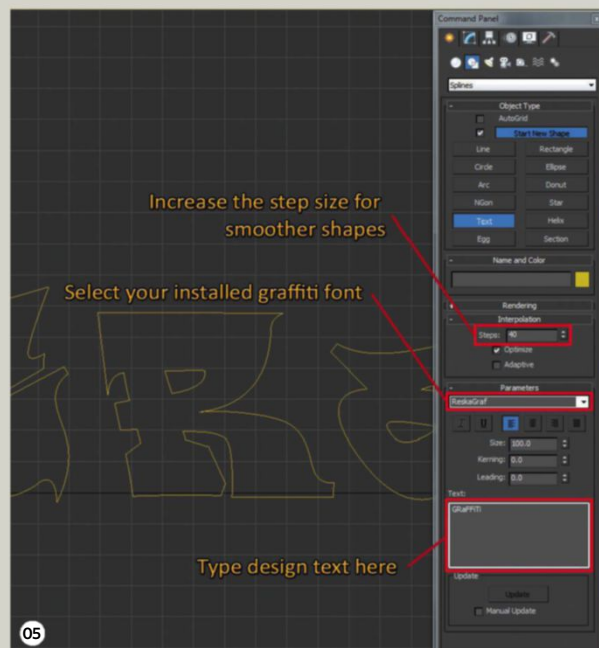
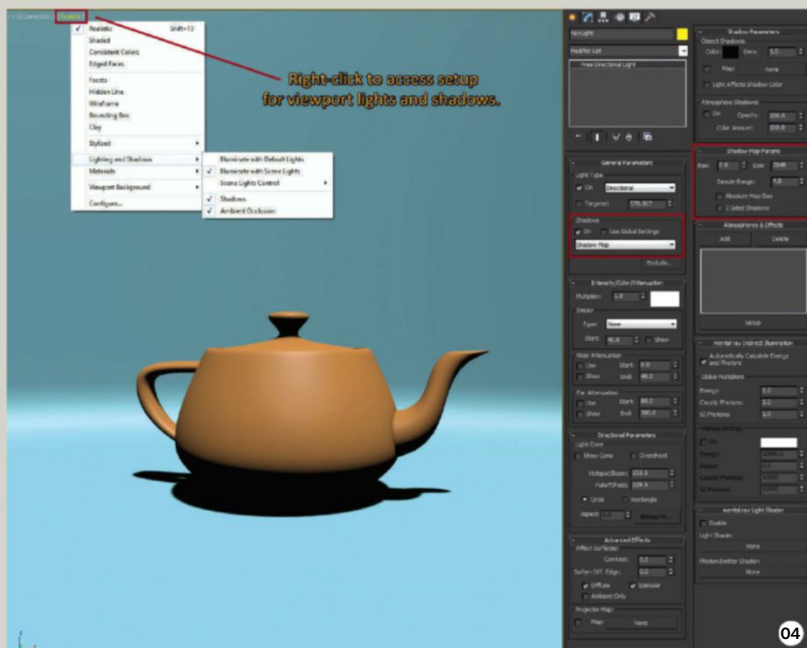
bent shape then use the Lathe modifier set to 90 degrees.

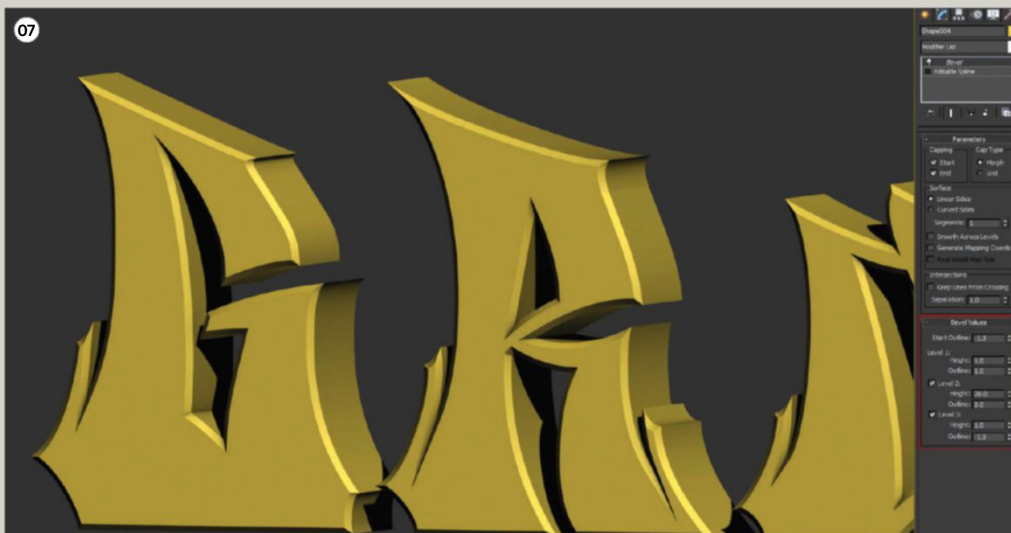
04 Build to the camera

It's important to design to a fixed perspective or camera, as this is the only way to understand the spatial relationship of the objects, reflections and shadows. We can always play with angles after the design is complete. For a dynamic and filmic look, set the Render Resolution to Widescreen. Here we're using a placeholder object to adjust the camera and lighting.

05 Make the text objects

Using Shapes, found under the Create tab, select the Text button, then pick somewhere in the Front viewport. This will place a new Text object in the scene. With the text selected, position it at the world centre (0,0,0). In the Modify tab, under Parameters for the text, highlight the stand-in text (MAX text) and type the phrase for your design. Leave the Size at 100 but change the font to the one you have installed for the design. Also increase the Interpolation and Steps values.





06 Refine the shapes

Now add an Edit Spline modifier to the original text object. In Vertex mode, remove any unnecessary Bezier points and amend the remaining points to match a template version of the text. Select individual letters, making sure to select internal letter shapes as well, then use Detach to create a separate object for each letter.

07 Add modifiers

To make the text look 3D, add a Bevel modifier, which will provide some nice bevelled edges that you won't get with an Extrude modifier. If undesirable extrusion occurs, you may need to amend the Spline shapes slightly. Do this in a Front viewport and try to avoid any Z axis movement of the Bezier points or handles.

08 Fine-tune the layout

This is one of the most enjoyable steps. With the main geometry modelled, it's time

Missing faces

When using Spline or Shape objects to create geometry, weird things can happen. If you apply a modifier such as Bevel or Extrude to a Shape object that has sections crossing over, the face that relies on that shape can disappear. Simply uncross the lines and the face should pop back. You can also get into trouble if you don't keep all of the Shape points on the same plane. If you work in a Front view, make sure you only move the points in the X or Y but not the Z axis. Keep an eye on the Side view too.



to start playing around with the 3D composition. Move, rotate and scale the elements to improve the overall design. Be careful to design to the camera perspective and, through test renders, keep an eye on how the shadows affect the overall composition. As part of this test, you might also want to try some extra Shape objects or refine the existing text.

09 Apply some materials

The materials are a major part of a successful graffiti design. Though not a hard rule, the more reflective and glossier the materials are, the better the design seems to sit in the 3D space. Experimentation is the key to this step in the pipeline. Make sure your lights are on for this process, as you should never set up materials without some kind of lighting. Without it you will never have an accurate read on Specular, Bump, Displacement, Diffuse, Reflection, Refraction and so on.

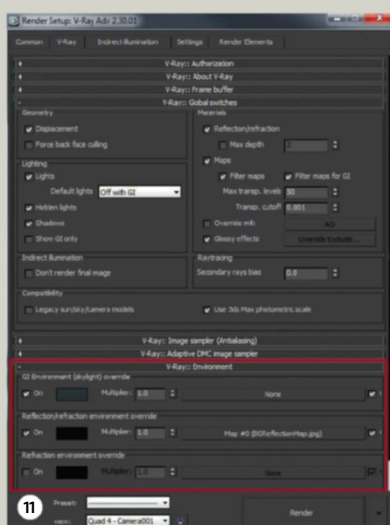


10 Build the lighting system

You already have a Key light, so the only other lights should be Fill lights and maybe the odd Specular light to bring out some highlight detail. For the Fill lights, keep the Specular setting switched off or use a GI (Global Illumination) solution in the renderer. For the Specular lights, use Omni lights with Diffuse turned off. Position these in a Perspective viewport while referring to the Camera viewport in Realistic mode. This enables you to see the highlights as you move the Omni lights around.

11 Set up the render

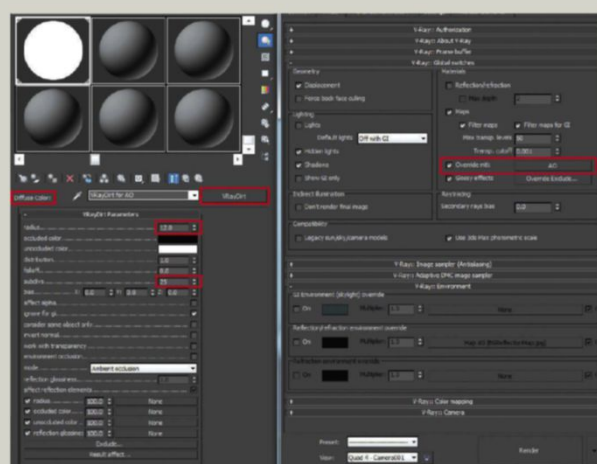
In the design you see here, I used V-Ray with GI switched on to take care of the



global Fill lighting. To enable a unified reflection solution, load a spherical Reflection map into the Reflection Environment Override button in the V-Ray settings. You can also adjust the colour swatch in the GI Environment Override to suit the level of scene brightness your design requires.

12 Generate an Ambient Occlusion pass

Using V-Ray, simply create a new standard material and drag the swatch from the Material Editor to the Material Override Button in the V-Ray Render Settings. Load a V-Ray Dirt map into the Diffuse slot and set the Self Illumination to 100%. Go into the settings of the V-Ray Dirt map and increase the Subdivs to a higher value. Try 50 Subdivs to start with and adjust this based on test renders. Also try adjusting the V-Ray Dirt Radius setting for a tighter/wider AO effect. When you're happy with the settings, render the Camera viewport and save as a lossless-format image.



13 Move to Photoshop for compositing

Open both renders and Copy/Paste the Ambient Occlusion pass onto the Beauty pass and set the Layer Mode to Multiply. Add Curves or Levels on top and adjust the settings to suit your design. Although not used here, adding other render passes will always give you a greater range of control in postproduction. These passes could include Shadow, Reflection, Specular, Diffuse and ZDepth.

Customise the fonts

To really give your design a one-off touch, add unique curves and elements to the basic font shapes using an Edit Spline modifier. Simply add extra points to the shape using the Refine tool. You can delete, reposition and even change the Bezier types for a totally original font element. Try to stick to a certain style or idea, as mixing it up too much can cause a mess if you're not careful.



Back to basics

He built this city on rock 'n' roll: Jahirul Amin guides you through modelling an olde-worlde village

Tutorial files:

- 00_blocking.ma
- 01_tower.ma
- 02_houseA.ma
- 03_houseC.ma
- 04_houseE.ma
- 05_houseH.ma
- 06_floor.ma
- 07_bunting.ma
- 08_cartAndBarrel.ma
- 09_sign.ma
- 10_final.ma



The final environment once modelled and arranged in Maya

Maya

environment in Maya

“With polygons as your bricks and mortar, learn to use edge loops, lattice deformers and bevelling to create an exterior environment with character”



This will be the first in a three-part series, first taking you through modelling, then texturing and shading, before finally

lighting, rendering and adding life to an exterior environment. In this first part we'll look at how to model a stylised olde-worlde village that has been inspired in particular by places such as Rothenburg ob der Tauber, a town in southern Germany.

However, as Rothenburg isn't exactly around the corner, I took a few visits to my local answer to Bavaria's finest. I spent some time taking pictures in places such as Portchester Castle, the village of Wickham

and the amazing Weald and Downland Museum in West Sussex. Being in these environments really helped me to get a feel for the kind of look I was after, as well as providing me with a mental library of ideas and images.

Accompanying this tutorial you'll find the concept art I created afterwards. This is a loose colour sketch of the final intended look that we'll hopefully reach by the end of the series. As you'll gather when you see it, I'm looking to give the piece a fun kind of feel. I don't want the lines to be too neat or uniform and there are some big, bold colours to come. What I'm aiming to

achieve is for you to be able to see this village as home to a range of inhabitants: a grumpy old man running the tavern on the left; a loud, coarse woman selling her wares two doors down; and a bloated lawyer with his dusty practice across the street. By the end of the final part, I'm aiming to have created a kind of moving illustration, an environment rich in latent life.

Before embarking on a project of this nature, it's very wise to keep the destination of your work at the forefront of your mind. Will it be for game, film or illustration? If your work is going to be for a game, then a low poly count is imperative and you'll have to achieve detail through bump or texture maps, rather than through the modelling process. If it's destined for film, the restraints on the poly count won't be as severe. However, it's likely you'll be required



The concept art used as the basis for this project

to achieve a photoreal end product, which will bring projection-mapping techniques into play. As mentioned, I'm looking to create an illustration, so I've got a lot of freedom regarding poly count. My approach will therefore be to model as much as possible rather than relying too heavily on Bump or texture maps. Having the objects physically there makes them interact with light so much more successfully.

To create an overall feel of a living and breathing space, it's going to be important to avoid too much uniformity. Time takes its toll on buildings, as it does on faces, and on no two houses in quite the same way. So, to maintain believability, we'll be looking to inject unique personalities into those houses as we would to characters. Having said that, it would be suicide to redo topology for all assets, so we'll be creating some hero assets for bricks, tiles and even whole houses. These can then be reworked, manipulated and lent some idiosyncrasies.

As far as technique goes, I'll be doing mainly box-modelling, working from a simple cube, then creating extrusions and adding edge loops where required. To speed up the process, as well as to add variation, we'll be using many tools from the animation tool set such as lattice deformers and non-linear deformers.

Because our environment won't need to deform, we can afford to be a little less strict regarding topology (only a little, remember). However, I'll still be sticking to quads for two reasons. First, the models can more easily be taken into other packages such as ZBrush later on, if desired. Second, quads can be subdivided very easily in order to add extra detail.

We'll be doing a lot of hard-surface modelling in this exercise, so take a look around at your own environment as you work to see how light interacts with objects. Your monitor, your phone, your shelves – most objects will have slightly bevelled edges that pick up light in certain ways. Ensure that you bring this particular reality

Some of the building variations created from the main house



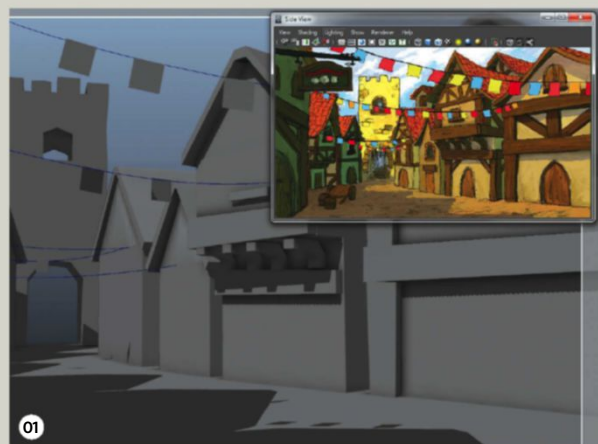
into your work to add depth and a sense of even more believability.

We'll be building the scene loosely at first using simple shapes and cubes to get an idea of the entire scene. Set up your camera angle, take each building one by one into a clear scene and push each one further than the last. Once you're happy with a reworked building, bring it back to the main scene and replace the dummy geometry. As you work, try to stick as close as possible to the reference you're using. It's very easy to find yourself muddled or unfocused if you lose sight of your destination.

One of our last steps will be to add some foliage to the scene in order to bring more character to the wood and masonry and to increase believability. To do this we'll be using Maya's Paint Effects. This much-derided bit of kit is actually pretty useful for what we have in mind here. It enables you to build anything from grass to cosmic dust using paint strokes. Also, the fantastic Ivy Generator by Thomas Luft (download from http://graphics.uni-konstanz.de/~luft/ivy_generator) will enable you to get some nice effects very efficiently.

Lights and Normals

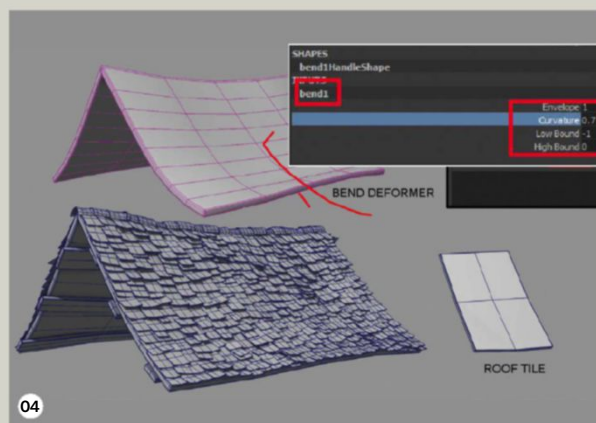
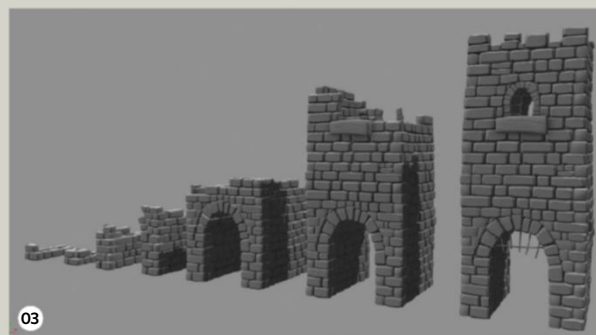
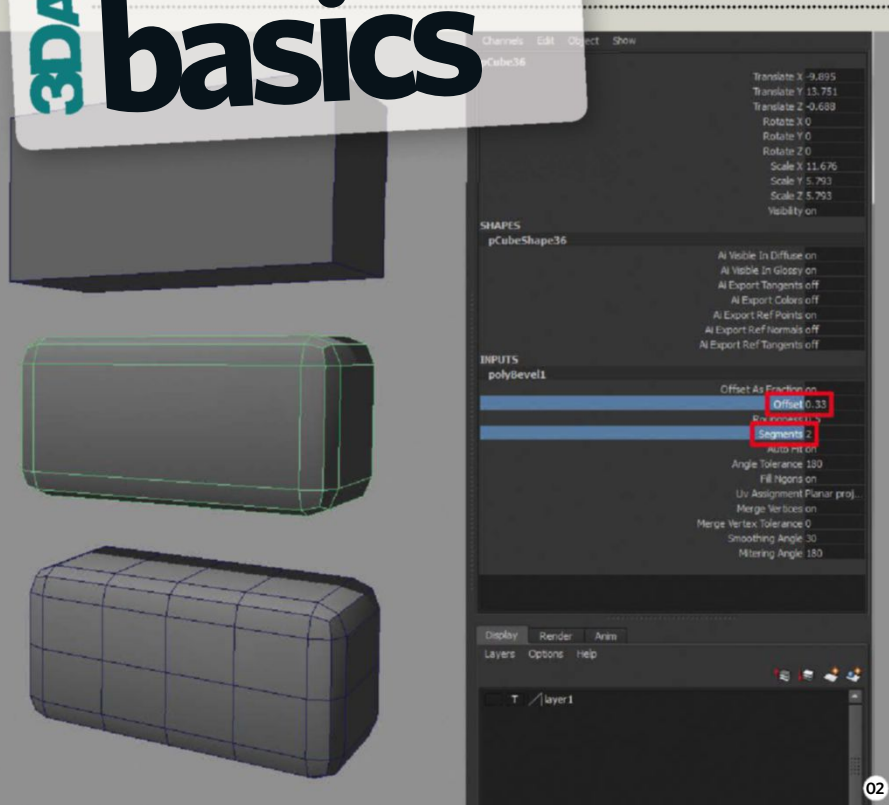
When modelling in Maya, I prefer to use Viewport 2.0 with the Ambient Occlusion setting turned on. Primarily this enables me to see how close objects are sitting against one another, but it also adds a bit more depth to the models. I create two lights, the first of which is a directional light with Depth Map Shadows turned on. The other is an Ambient light, for which I take the Intensity down to around 2.5. Throughout the modelling I constantly play with the orientation of the directional light to see how the various forms react to it. I also tend to duplicate and mirror a lot of geometry over the scene, which causes the Normals to become inverted. Having lights in the scene will reveal these inverted Normals, but navigating to Normals>Reverse for the inverted polys will get everything back in order soon enough.



Rome wasn't built in a day...

01 Import concept art and block out forms

In the Viewport panel, go to Panels>Perspective>New. Now go View>Image Plane>Import Image and load the 'supportingImage1.tif' image. Under Attributes for the imagePlane1, check Looking Through Camera and Attached to Camera. Next, go to Panels>Tear Off to have this as a floating window to work with in your Maya scene. Now begin using simple polygon cubes and cylinders to block out the scene. Next, create a camera to work towards and reposition these basic shapes to match your reference image.



02 Shape the tower

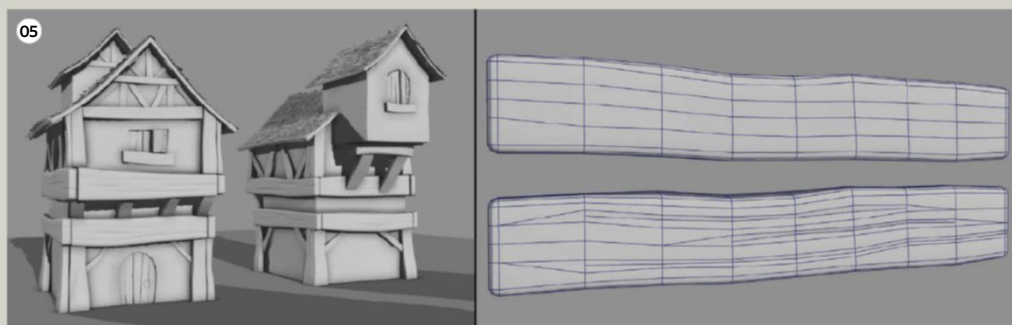
Now export out the tower geometry as an OBJ and import it into a new scene. Create a poly cube and scale it into a brick shape. With the brick selected, go to Edit Mesh>Bevel, increase the Segments value to 2 and play with the Offset value to create a softer look. Use the Insert Edge Loop tool to provide more detail. Duplicate this brick a few times and create a few variations by pushing the points around. Start using these blocks to build up the tower.

03 Use lattice deformers

To help speed up the process of creating unique bricks, navigate to Create Deformers>Lattice. Set the S, T and U Divisions to 2 and go into Component mode to push the shapes further. Try to consider the structure as you build the tower up. Although we aren't going for a fully realistic tower, we still want to sell the idea that it's had to stand strong for years. Make sure you analyse real buildings and walls, taking notice of the formation of the bricks. Gathering and analysing reference is important, as it will help inform and support your modelling decisions.

04 Rooftops

Once the tower is complete, import it back into the main scene and export out one of the low-poly houses. Start creating the roof by taking a polygon cube and extruding out the faces to create an upside-down V shape. Bevel the edges and then insert



some edge loops. Select some vertices and use the bend deformer to add some curvature to the roof. You can find this tool under Create Deformers>Nonlinear Deformer. Take a simple cube once more to create a roof tile. Duplicate the tile many times to create variations and then place them against the roof using the Translate and Rotate tools.

05 Create the main house

To build the wooden beams of the buildings, a humble bevelled cube is the way to go. To form the variations, try using the trusty lattice deformer once more. Then, with the Interactive Split tool – or, my favourite, the Split Poly tool – cut into the beams and push in the edges to add grooves. The main body of the house also begins as a cube, before being bevelled and cut into for the windows and door. Next, add some extra edge loops so you can ever so slightly push and pull the vertices to break up the clean nature of the cube.

06 Create variations of houses

Once you have the first house complete, you can begin creating variations to fill the environment. By using the main house as a base, you can help maintain a similar feel to the piece as a whole. Play with the silhouette to make each house feel unique. Make some tall and thin, but others short and fat. Try to alter the shape of the door and window frames and use the wooden beams to give each house its own character.

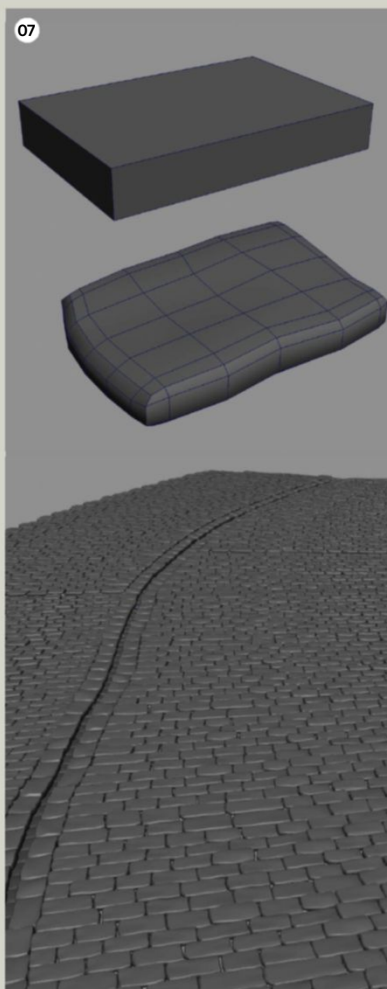


07 Use a cobbled pavement

You can create a bevelled cobbled stone from a starting poly cube. Duplicate this stone to make four rows, then form some variation in each cobble using the Soft Select tool. These four rows can then be duplicated many times, with some small changes made to break up the uniform appearance that can otherwise occur. As you continue to build up the floor in this manner, you may find the scene file gets very heavy, very quickly. If this is the case, then alternative methods may be best advised, such as creating a Normal or Displacement map.

Ivy Generator

You can download the Ivy Generator from: http://graphics.uni-konstanz.de/~luft/ivy_generator. For each house that would require ivy, I first selected all the pieces and duplicated the house. I then combined those duplicated polys into one mesh by going to Mesh>Combine. I then went to Mesh>Triangulate and exported out that model. Load up the Ivy Generator, import the model and select a point where you would like the ivy to start growing. Hit the Grow button and watch as the ivy creeps out. When happy, hit the Birth button to see the ivy. Export this and then bring it back into your Maya scene.

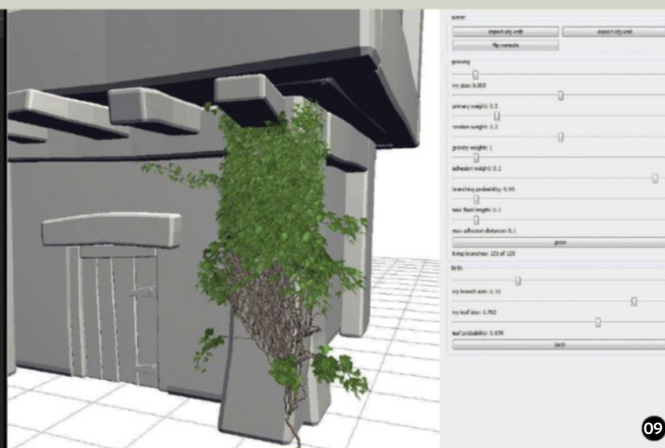
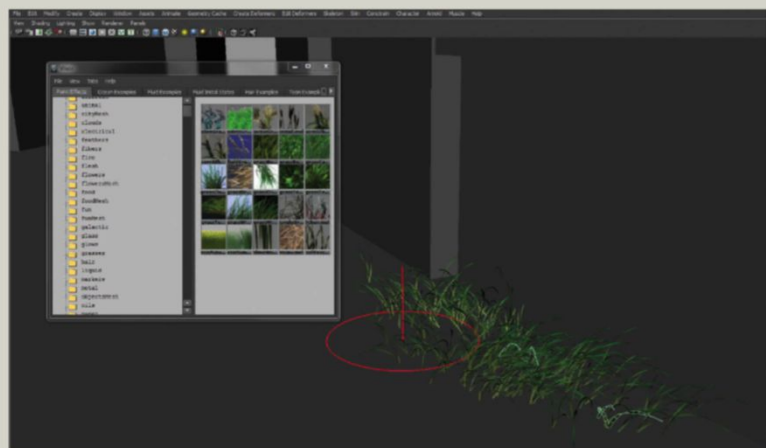


08 Add in some props

A tower, some houses and a cobbled street give us an environment, but to make this town feel lived in, we need to add some props. These could be market stalls, boot-scrapers, a horse trough and so on. Here I've gone for a cart and some beer barrels, a pub sign in the foreground and some bunting running through the street. I found reference online to get some basic shapes and then pushed them further by using the techniques mentioned.

09 Build the foliage

Natural elements will break up the man-made structures and bring age to the scene. For the grass you can use Maya's Paint Effects. Just load up the Visor, under WWindow>General Editors, and scroll down to the Grasses tab. Have a play with the many variations of grass brushes until you find the option that suits you best. Once you are happy with your strokes, you will need to convert them into polygons. Select all of the strokes and go to Modify>Convert>Paint Effects to Polygons (Options), check Quad Output and hit Apply. Don't delete the history on the grass mesh, as we can use the Paint Effects settings to add movement to our grass later on. The Ivy can be made with the wonderful Ivy Generator by Thomas Luft.



10 Bring it all together

Now that we have all our assets, it's time to bring them together. One by one, import each house into the low-res scene that was first created. Spend some time rearranging the houses as well as the props until you're happy with the composition. To help frame your work, turn on the Resolution Gate to the camera. If you're finding that the assets are too heavy to manage altogether, try using Referencing. You can think of Referencing as pointing to another scene file without actually importing it. Any changes that you make to the referenced file will also update in the file that already has the assets referenced in it. It's a fantastic way to work and I highly recommend anyone not used to referencing to look into it. Until next time, happy modelling!

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Artist info



Maciej Mackiewicz

3DArtistonline

Username: Maciej Mackiewicz

Website

www.mimostudio.pl

Country Poland

Software used CINEMA 4D, V-Ray, Photoshop

“There’s only one light in this scene; a dome light with an HDRI image in the texture slot. I always use this technique as it gives the most realistic results”

Thonet factory 2013

This image was inspired by photos of the Thonet chair factory taken by London-based photographer Rachael Smith. I wanted to create something different from the usual apartment interior. That’s why I decided to take on an industrial subject like a furniture factory.

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André Kutscherauer is a freelance 3D artist in Munich, Germany. He specialises in high-quality 3D product visualisation for marketing and 3D product animations

ZBrush

Gustavo Ahlén
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Gustavo Ahlén is the founder and creative director at Enginotion. He is also a professional 3D and visual effects designer for film, videogame and advertising projects



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Render with 3ds Max

“How can I achieve photorealistic car renders with 3ds max and iray?”



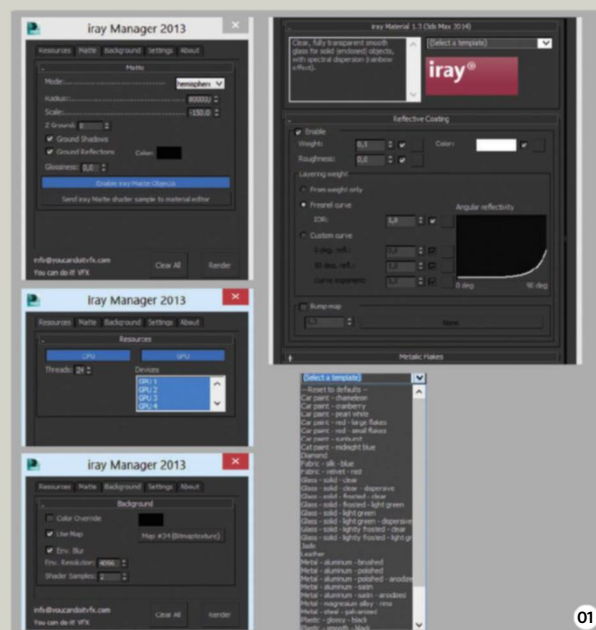
Here you'll learn a fast and intuitive way to produce renders with 3ds Max and iray on the base of high-res HDRIs. As this

is not so easy to achieve with the onboard tools of 3ds Max itself, these steps will fully outline how you can achieve fast results with the help of two very handy and free tools.

iray has a very powerful shading model, and as such can produce a great car paint shader. As such you can set up the HDRI scene very intuitively. The outcome of this process will be a photoreal scene that can be rendered on either a GPU or a CPU.

01 Set up the iray manager and materials

To kick things off we have to download and install the two helper tools. The first is the iray manger script that can be downloaded here: www.youcandoitvfx.com/?page_id=12. With this tool installed we can easily determine whether we prefer to render on a CPU, a GPU, or both and we also have access to a special HDRI Projection mode that is not accessible inside 3ds Max at the moment. The second tool we have to download for photoreal car renders is the iray material 1.3 from here: [ftp://ftp.nvidia-arc.com/pub/iray_material_plugin_1.3_Max2014.zip](http://ftp.nvidia-arc.com/pub/iray_material_plugin_1.3_Max2014.zip). This is a material plug-in specifically for iray that makes layered materials available. It provides a huge bunch of material presets and also presets for car paints.



01

LightWave

Eugenio Villarreal
www.flickr.com/artecn1



Eugenio is a graphic designer as well as an environment artist and matte painter. He also loves to make textures and has a big interest in traditional painting methods and styles

3D-Coat

Pierre Rogers
www.sketchzombie.com



Pierre is a native of Chicago and works as a character artist. He specialises in hard-surface sculpting techniques and this issue explains some quick retopology tips



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02 Set up the base scene

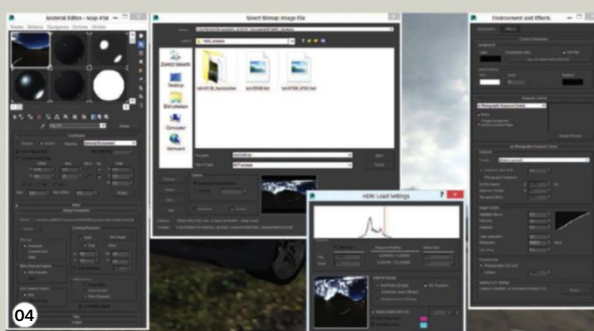
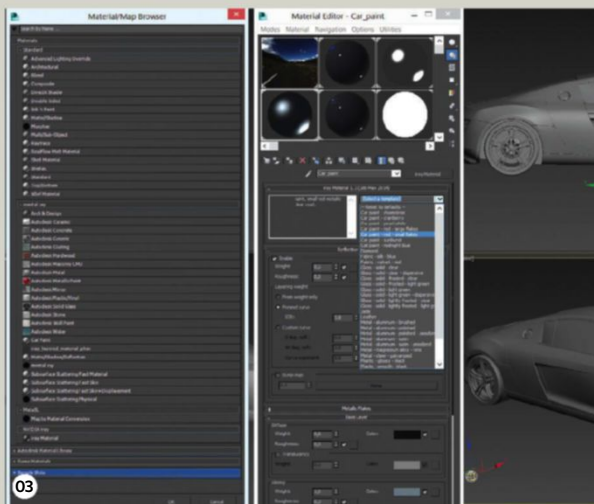
Next, import or open the car model. In my case I'm using the final 3D model of my tutorial book: *3D car modelling with Rhinoceros* (www.ak3d.de/all/3d_car_tutorial_book_animation) where you'll find the finished 3D model available, but any model will do. Move the model into five groups: the chassis and the four wheels. After placing the pivot point of the front wheels, we can turn them for a perfect pose. We also have to create an Omni light. This turns the standard light function from 3ds Max off.

03 Make an iray material

To place materials much faster, we can place the different car parts on various layers with their material name as the layer name. Next open the Material Editor and then the Map/Material browser and search for the iray material. Choose a preset, place it next to the material layer and fine-tune the parameters. For example, here I've picked the Red Car Paint preset and changed the colour to a grey. Now select the objects on the layer and assign the material to that layer. Repeat this step for every material layer.

04 HDRI setup

Open the Environment dialog, choose Use Map and select a Bitmap slot. Drag this Bitmap slot to a Material Editor field and select an HDRI in the Browser field. For the colour you can choose Real Pixel 32-bit and leave the values as they are. Switch the Projection mode to Hemisphere and close the Material Editor. In the Exposure Settings, pick the mental ray Photographic Exposure tool and switch on the Affect Maps and Environment checkbox. Now click into a viewport, hit Alt+B to open the Viewport Background menu and choose to see the Environment Map.



05 Render and fine-tune

Now we can start rendering the scene. To do this, open up the Environment dialog and the Material Editor and start fine-tuning the various settings. First look at the HDRI background and set up the Exposure level to a decent value so that the details of the background image remain visible. Next set up the white point and contrast settings until the image reaches an acceptable level. We can even add a vignette effect at this stage. As soon as the background is looking good, start to refine the iray material settings. Just change these and re-render the scene until each material looks as high-quality as possible.

06 Final settings

We can finish up with a handy trick. Start the iray manager script, switch the Projection Mode to Hemisphere and tick on the boxes for Shadow Ground and Glossy Ground. This finally transforms the HDR image so that the car stands on the ground with a correct shadow and even reflection on the street. Next, fine-tune the values for Ground Scale, Environment Scale and the Reflection Glossiness, then render the scene constantly until the result looks perfect. Finally we'll render the scene as an HDR file and choose a decent Sampling value, such as 2,000. From this point onwards, any postproduction steps can be completed using Photoshop or After Effects.

3D car modelling with Rhinoceros

This is a 624-page complete step-by-step guide on how to model an R8 in high quality, with mainly A-class surfaces using Rhinoceros. It is the perfect addition to this rendering tutorial, as you will learn how to create a photorealistic 3D model of a complex-shaped car on the base of just the blueprint. You will learn how to construct the whole model from scratch up to the quality as the renderings on this page. Each working step is illustrated with a screenshot, the used tool with an icon and a description what to do. It's available to buy online at <http://ak3d.de> as a hardcover book or as a PDF file for download.

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Gustavo has supplied reference images to guide your work appropriately. He has also supplied a full human skeleton that's ready for scaling



ZBrush

Make a human skeleton to scale

“How can I adjust the correct scale for a complete human skeleton?”



Over the past several issues of 3D Artist I have been detailing how to sculpt the human skeleton, from the skull down to

the torso, arms and legs. If you have been following the series so far you will now have a full human skeleton – if not, you'll find it supplied with this issue.

When sculpting anatomy such as this it's never too late to improve your model by adding new details that you previously left out. As such, here we'll reveal the tweaks that can be made to the proportions, scales and weights of the skeleton's bones to ensure a more anatomically correct result.

The thickness of the bones plays a fundamental role in the finished version of the sculpture, because if they look incorrect the whole sculpt can fail to impress. Many artists will only consider the length of the bones, but upon seeing the model from afar they will notice an offset in the thickness can cause one bone to look as if it's incorrectly placed.

There are many subtleties to consider – for instance, when sculpting the femur and tibia, you must pay close attention to the latter. This is because the middle part of the bone loses its thickness slightly, whereas the top is larger where the joint meets with the femur. These tiny variations must be considered to enable us to gain

greater control over the final appearance of the skeleton model.

Another important aspect to consider when working on anatomy such as this is the joints of the skeleton and how they work. It's important to focus on this so you can develop your work more easily. Suppose you have two gears where the teeth don't fit properly – the mechanism wouldn't work. The same principle applies for this skeleton. The end of each bone is where the joints perform a necessary rotation for movement, so we need to pay attention to these forms and make sure they adjust naturally.

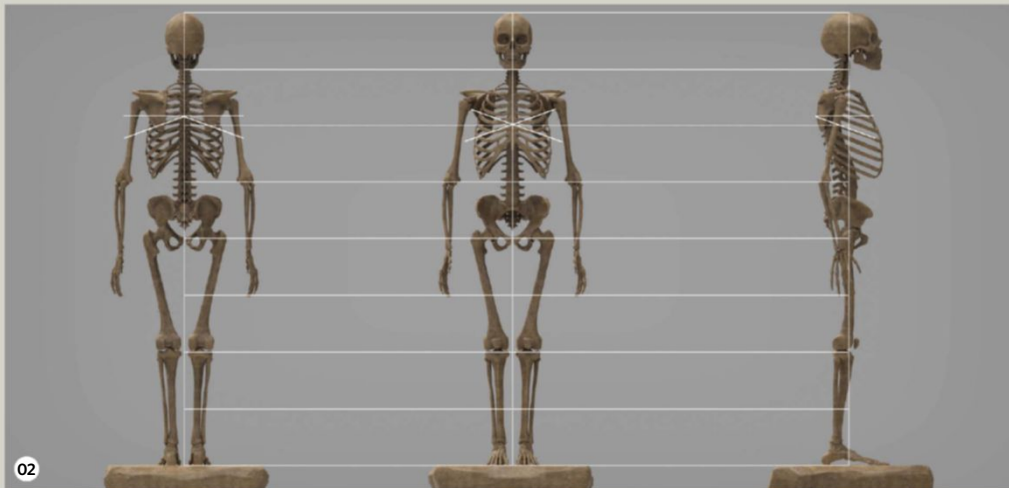
Before we commence, it's important to remember that there is no perfect accuracy when it comes to the height and

proportions of a person, but there are certain rules that make it slightly easier to make a model as accurate as possible.

01 Adjust the scales

Once you've got a base skeleton sculpt, you need to resize its different parts according to the reference images. Observe the white lines and how they divide the skeleton from the axes in the accompanying image. I made an orthographic render to make things easier, because using perspective renders as references can distort the correct proportions. By using the attached reference files you can understand how to modify the size and position of the different parts. Not all bodies have a perfect measurement, but try to follow these general rules.





Tips to keep in mind

When modelling the ribs and the joints as well as the surface of the bones, we must find an appropriate level so that the surface doesn't become too flat or round. You need to learn how to calculate these levels after several attempts, so I would recommend looking at photographs of real bones that will help you to follow small details. However, as already mentioned, one of the most important things is to understand the essential functions of each bone. I often use hPolish to flatten surfaces, Clay to get an approximate mesh and the Smooth brush to finish off the final effect.



02 Tweak the rib angles

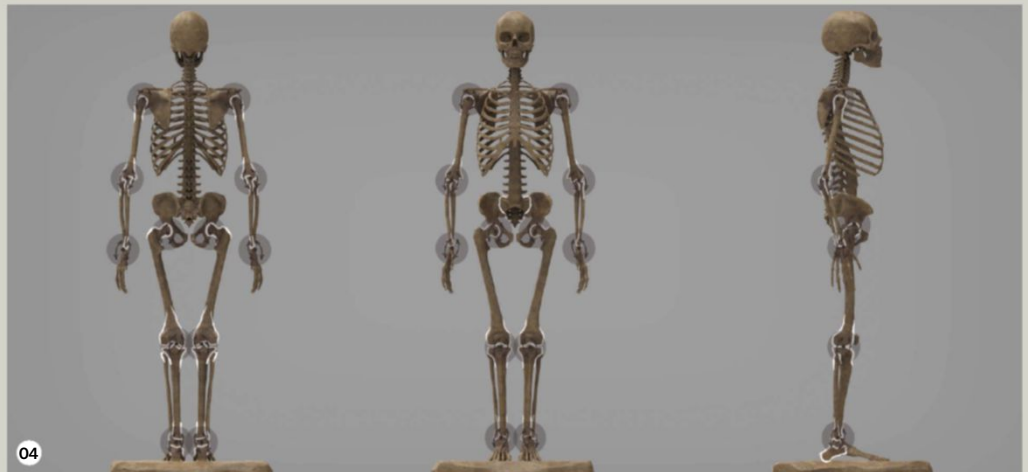
Next we need to focus on the ribs, particularly their angle, which need to look absolutely correct when sculpting a skeleton. Importantly these should have an inclination other than 0 degrees, as you can see in the left model. This angle is important because it enables us to determine how the ribs are joined with the thoracic vertebrae. Pay attention to these angles so that the joints look natural and unforced.

03 Find symmetries

Look at your reference images and try to locate new symmetries to ease your work. In this case I drew white lines in the legs, going through them to draw out symmetries from the head of the femur (middle of the skeleton) until the foot of the opposite leg. Look at the middle skeleton and see how the ribs have a similar width to the hips, noting that the hips have the height of one head. You won't always find perfect symmetry in skeletons but you can still establish rules.

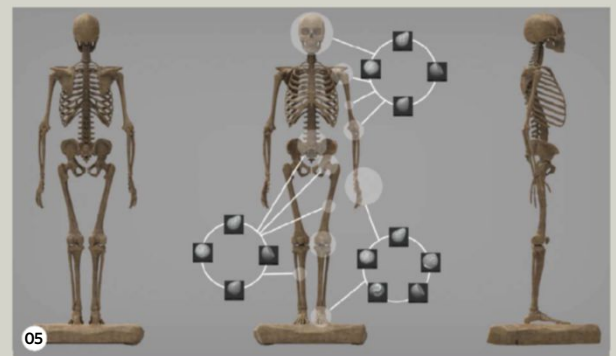
04 Understand the joints

As has already been mentioned, the ends of the bones play a major role in achieving realism. In fact, by understanding their movements and how they work we can better appreciate how to sculpt these parts. Try to imagine the friction of each joint (extremity of the bones) with its opposite number, to consider if its parts fit perfectly. Thinking about the joints in this way will help you to achieve a better result when attempting to achieve greater realism.



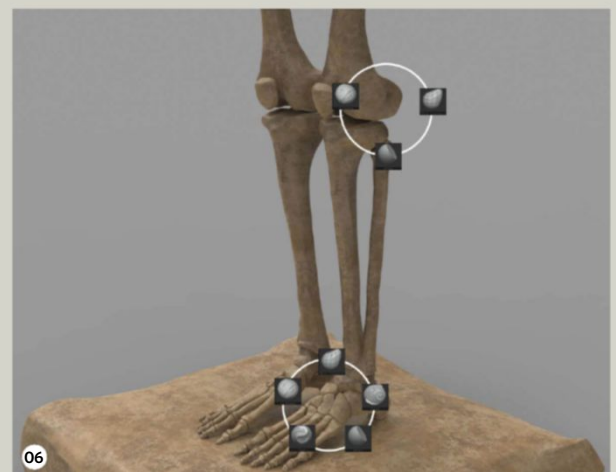
05 Apply brushes

The Move brush is recommended when you need to scale the model. Here I used it to adapt the ribs, legs and so on, according to the scales in the reference images. Sometimes the joint between the femur and tibia is positioned below the correct measure (two heads), so using the Move brush will help correct its position. Another useful brush to apply to the hands and feet is Slash3, with a high Intensity setting. This tool can create deep lines around the clay used in the small bones such as hands or feet, so we can approximate these separations using the Pinch brush.



06 Add the final details

In this final step we will apply smaller features using a variety of brushes. In order to increase the realism of the bones, you should use a brush with an Alpha channel selected using a texture that will apply a rough, unfinished look to the skeleton. Now use the Clay brush to sculpt the joints and to achieve an approximate shape, and then apply hPolish to flatten the mesh. In doing so your skeleton will take on a more realistic appearance. These kind of models must avoid a surface that looks too soft!



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- orange-basket.lwo
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Produce organic renders in LightWave

“How can I make a quick and realistic render for organic objects?”



LightWave is a great package in terms of working at speed. The addition of the VPR and modelling tools in the 11.5 version multiplies this speed even more.

I've been using FPrime since 2007, but LightWave's new VPR helps to present the result before we even move to rendering. Without these tools, rendering would be a lot like taking a picture in a dark room: you could end up with anything.

During this brief explanation I will teach you how use these tools effectively, including the techniques I've been using since 2005 when I started making imagery with LightWave 7.5. Since then, the technology has improved a great deal.

Achieving photorealism is the lofty goal of many 3D artists, so in this tutorial I will

explain an effective process to produce a simple still-life render. As ever, good research and useful reference is essential. SubPatches will also be used, along with procedural Displacement maps to add imperfections. We'll also be making Specular and Bump maps to achieve a good balance of light and realism.

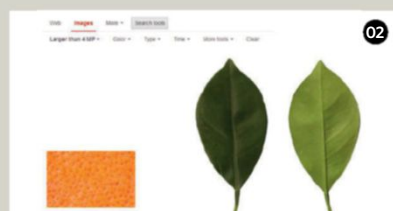
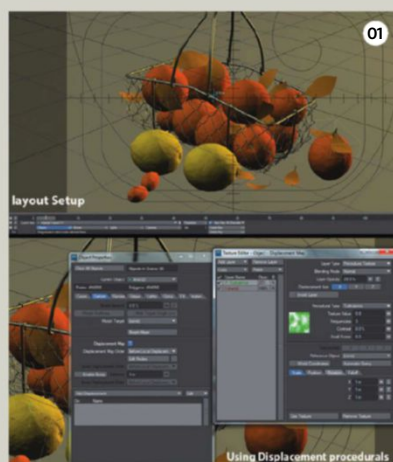
This method requires the use of a lot of Displacement texture maps to create scores of imperfections, because it's these that produce the precise photorealism that we're looking to achieve. Overly glossy or smooth fruit just won't look credible.

I prefer to use LightWave's basic shaders, simply tweaking them according to the needs of the various models, as well as a combination of Diffuse, Specular and Bump maps. The higher the resolution of

the images the better. For displacement I usually apply a Bump map, but then blur it in Photoshop to soften the edges slightly.

The lighting stage is relatively easy here. We'll use basic area lights, with one main light and some others just to produce nice highlights along the edges. Sometimes a linear light can improve the results, and applying Global Radiosity along with warm lighting can promote a more natural atmosphere. These warm lights will also compete with the citric colour of the fruit.

When setting up the render, you will see that there are many camera options, lenses and various types of antialiasing. For the sake of this tutorial I'll run through my own settings for presenting a realistic render, but you should experiment with these settings to find what works for you.



01 Initial setup

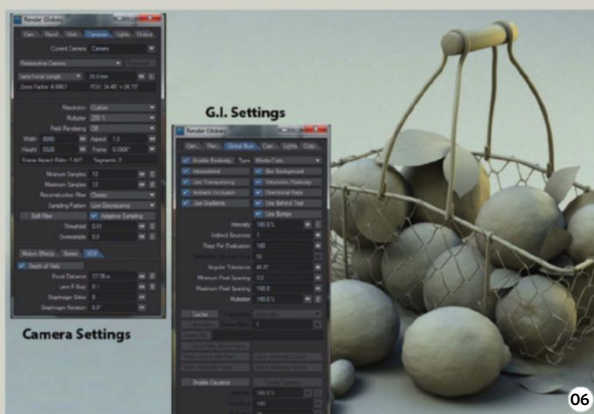
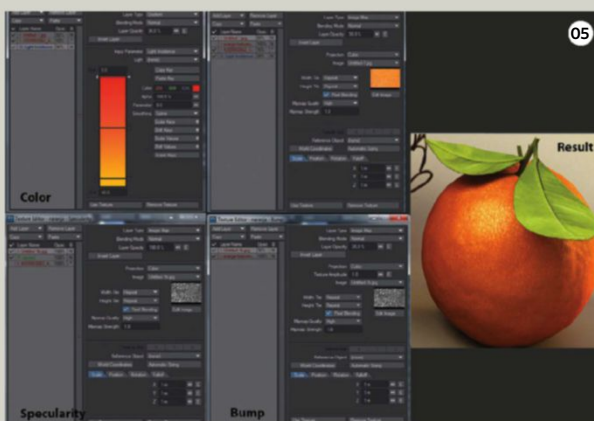
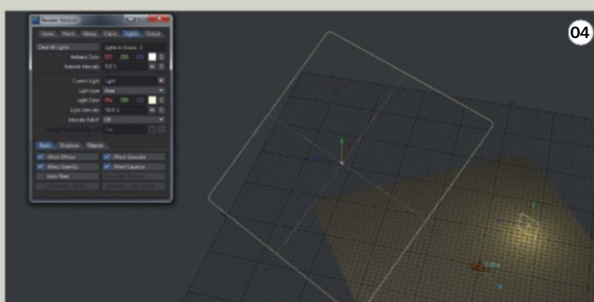
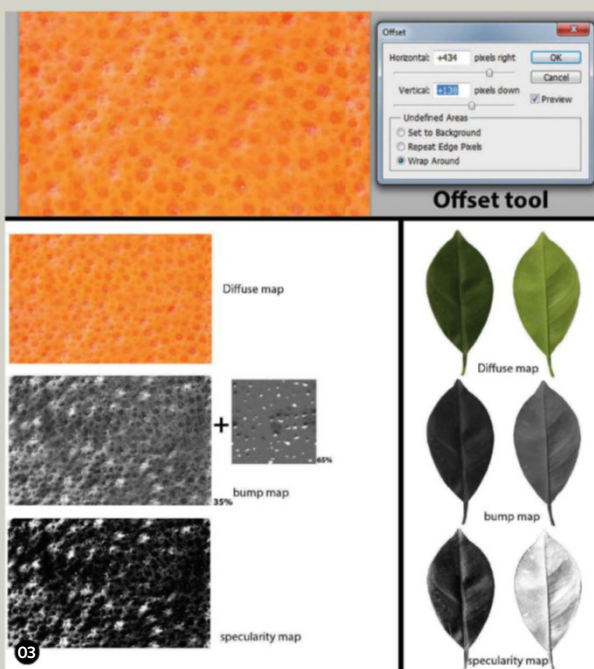
Modify spheres in Modeler, then apply Procedural Noise to each one to produce imperfections in the mesh surface. Activate SubPatch mode, then increase the geometry in the Object Properties tab under Geometry. Now, in the Render SubPatch level, increase the number of polygons until you see a natural mesh. The central composition is simply two models of the lime and the orange repeated several times, all within a basic setup of a box for the floor and a white backdrop. Image displacement has been applied to the leaves

02 Locate textures

www.cgtextures.com is a great source for free assets, but finding commons images via Google is another option. Just search for hi-res images of more than 4,000px size for the leaves and orange tile textures. If you can't find a specific texture, try to search in other languages for a larger range of results. Once you find the textures, create a file for all of the different resources you are going to use to mimic the orange and lime look.

03 Build texture maps

Photoshop's Offset tool is useful for making any texture into a tile for your projects. Using this in conjunction with the Clone Stamp, you can make the tileable orange texture and separate Specular and Bump maps. Do this by converting your file to black-and-white to play with the Level values. For the Specular map, try to get hard, white spots to capture the peculiar bright of an orange. For the Bump, try to get a good contrast of tones, but not too extreme.



Achieve useful flaws and contrast

I always like to point out that imperfections are the best way to communicate realism. Think about the life of the objects in the scene. For instance, the basket was maybe left outside, and as such you'd find rust on it, or maybe with time it would have scratches. Perhaps one orange is rotten or not quite ripe? Another point is the contrast. I always find beauty in contrast, it's like candy for the eyes. You can produce contrast in light, colours, as well as in object complexity. Try to mix this with nice composition within the camera. It's the perfect recipe for beautiful results.

04 Lay out your lighting

Once you have all the meshes placed and the preliminary textures are added, start to experiment with area lights. Area lights are effective for this process because they can produce soft shadows by growing the scale of the light. A Monte Carlo Radiosity is perfect for this piece, as it works great with the white backdrop. Later you can add the main area light at 50% Strength to get nice contrasts, but make sure they're not too bright. This will give you a range to work on in post-production. However, another area light along the right side will complement the outlines of warm light.

05 Organise your shaders

Here we'll use preset and default shaders, before including the Specular and Bump maps. Next apply a colour gradient for the oranges and limes, combined with the Diffuse colour map. For the Bump maps, use a 200% strength, then add a Specular map in the Diffuse channel to bring contrast to the surface holes of the fruit. Use the Specular map on the Reflection channel and then a 360 panorama with 20% Reflection Blur. The basket is a basic iron shader and the floor is a plain white to bounce light onto the scene's objects.

06 Move to the final render

For the render we'll use Monte Carlo Radiosity with one bounce in the LightWave render engine. Here you can see a large render because of the huge resolution of the textures being used. This gave a range of details at the expense of around 30 minutes render time. The camera was set up at 35mm, and an Antialiasing Level of 12 with a classic Reconstruction filter and a Low Discrepancy Sampling Pattern was used. The scene was rendered in TGA format. The Alpha value of the floor was set to zero to correct the objects, floor and shadows.

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Tutorial files:
• NeoHelix Ninja obj.
Decimated Ninja Bust



Hard-surface retopology in 3D-Coat

“How can I easily retopologise a hard-surface model in 3D-Coat?”



With auto-topology resources at our fingertips, manual retopology is still far from a lost art form. With the increasing

popularity of hi-poly sculpting and its integration into pipelines throughout many new and old mediums, retopology follows right along for the ride. 3D-Coat is a prime candidate in your toolbox of retopology resources, offering a fine selection of tools to get the job done with ease and control. Each tool has its strengths and weaknesses and all except the Cap tool can be used exclusively to complete an entire project, enabling you a variety of means to find what flavour suits you best.

In this tutorial I will cover the means of importing and retopologising a detailed hard-surface mesh using 3D-Coat. I'll make heavy use of the Retopo Groups and VoxTree palettes to establish a smooth and controlled workflow, along with the use of the H key to auto-select mesh

islands to separate or hide pieces. This will establish a clutter-free viewport, so we can approach each section without our reference mesh or previous pieces blocking our view.

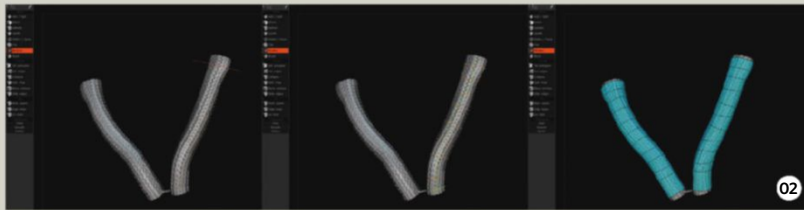
Given that the target model is a hard surface, there is further opportunity for more additional UV seams than normally seen on organic models. This provides more freedom to block out topology as individual shells.

We will get things started by opening 3D-Coat, then selecting Voxel Sculpting from the intro splash screen. Next select the folder icon to navigate to the location

of the base mesh. Once loaded, the mesh will show up in viewport looking a bit fuzzy and surrounded by the Transformation tool (the fuzzy look is a pre-voxel mass preview). Simply hit the Apply button in the Tool Options dialog box. Do not upscale the mesh, voxels grow massive in detail the larger they are and you run the chance of a crash.

It's best to allow for a moment for the mesh to be voxelised, if you will. Import your mesh as a Voxel to retain the ability to hide and isolate geometry islands within the mesh. Now that the mesh is loaded, we are ready to start.





01 First step

With our mesh loaded, before diving in it's important to grab some topology reference, which is essential for the face portion of our base. Anatomical topology is an industry standard with appropriate loops around the eyes, nose and mouth. We'll start with the eyes, making sure Symmetry is activated by hitting the S key, or simply clicking the Symmetry menu, turning on X-axis Symmetry and turning off Show Symmetry Plane. Using the Strokes brush, draw complete ovals lining the eyelid. No need to be perfect, you can always use the Brush tool or Ctrl/right-click to adjust points. Next, intersect to create quads, then when done hit Enter and use the Cap tool to close the eye cavity. The Strokes tool is fast and easy, but doesn't always deliver perfect results, so take this time to block out the rest of the face using the Points/Faces, or the Add/Split tools.

02 Extrude a cylinder

After making sure to create new Retopo Groups to organise your shells, move to tackling the tubes in the character's neck. Use the H key to auto-select the mesh island and Opt/Alt-click the respective Visibility eye icon in VoxTree palette. Use the Strokes tool and, while dragging in empty space across the tube, create a cross-section loop. After placing a few of these loops, draw a line along the tube and hit

Enter. This is 3D-Coat's bridge technique that's great for handling cylindrical objects.

03 Utilise symmetry

Approach the hair like most pieces using the Strokes brush, along with Points/Faces to get down some initial geometry. Use the Add/Split tool to fill in any gaps, making sure to follow the creases. The strands of hair are done on a separate group with Symmetry turned off. Do this by hitting the S key or clicking Symmetry menu and turning off symmetry on the X-axis.

04 Rinse and repeat

Now approach the mask and rinse and repeat the same method of the previous steps. Establishing the loops for the circle design next, use the Split Rings tool to add additional loops quickly. Next, fill in the rest using the Strokes tool, placing edges along angle shifts of the contour of the shape, while making sure to place geometry along the bevels.

The VoxTree palette

Be sure you make use of the VoxTree palette. If this isn't open already you can find it under: Windows>Popups>VoxTree. This palette has all our mesh islands separated and easily selectable by hovering the mouse over the mesh and hitting H to auto-select the mesh island. You can isolate by Opt/Alt-clicking The visibility Eye icon, and repeat to reveal all.

In addition to the VoxTree, you can make use of the Groups palette, which works exactly like Photoshop layers. The left-most button adds a new group ready to add topology. If the Groups palette isn't visible, go to Windows>Popups>Groups.

- Use Z-Bias and Opacity at the top of the window to affect the visibility of the Retopo geometry.
- Hover the mouse over and hit Delete to remove unwanted Points/Faces points.
- Hit the Esc key to end tool actions.
- Use the Brush to move and smooth geometry by holding Shift.

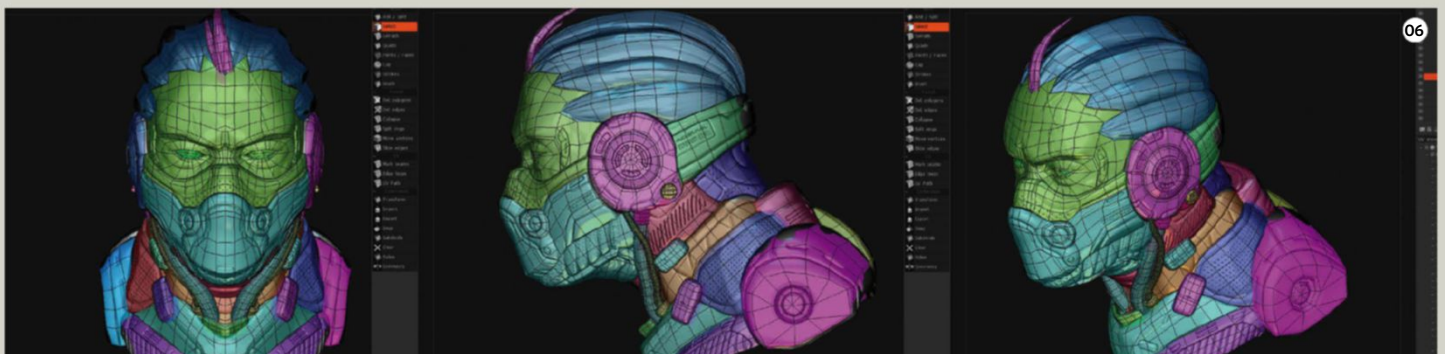
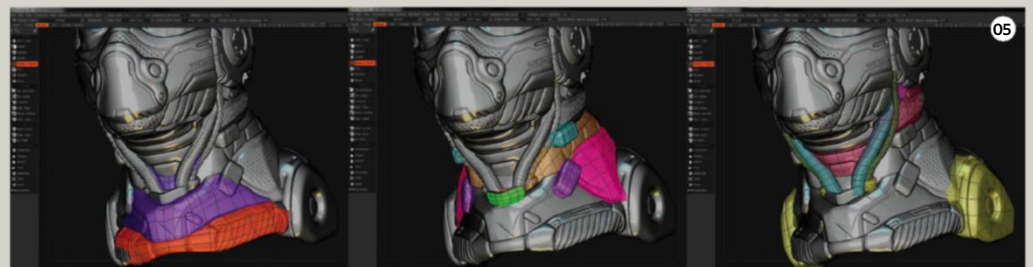


05 Last but not least

Continue to create new groups and isolating mesh islands as you approach the many pieces located in the neck and shoulders. You should use the Add/Split tool to flesh out these due to the need for precision, given their small size with bevels. You should also be ensuring that your shells are intersecting and leaving no gaps.

06 Wrap it up

Upon completion of all the pieces, be sure to check your work to ensure a gap-free end result. Turn off the visibility of the Root in the VoxTree palette, leaving only Retopo shells visible to check work and make the necessary tweaks. Next we'll apply more symmetry, as the current symmetry is virtual. Under the Commands section of the Retopo tools, hit the Symmetry button, with the virtual Symmetry still on. Also, be sure that the visibility of the asymmetrical hair strands group is off prior to applying Symmetry. Last, open the Retopology Menu and export the results.



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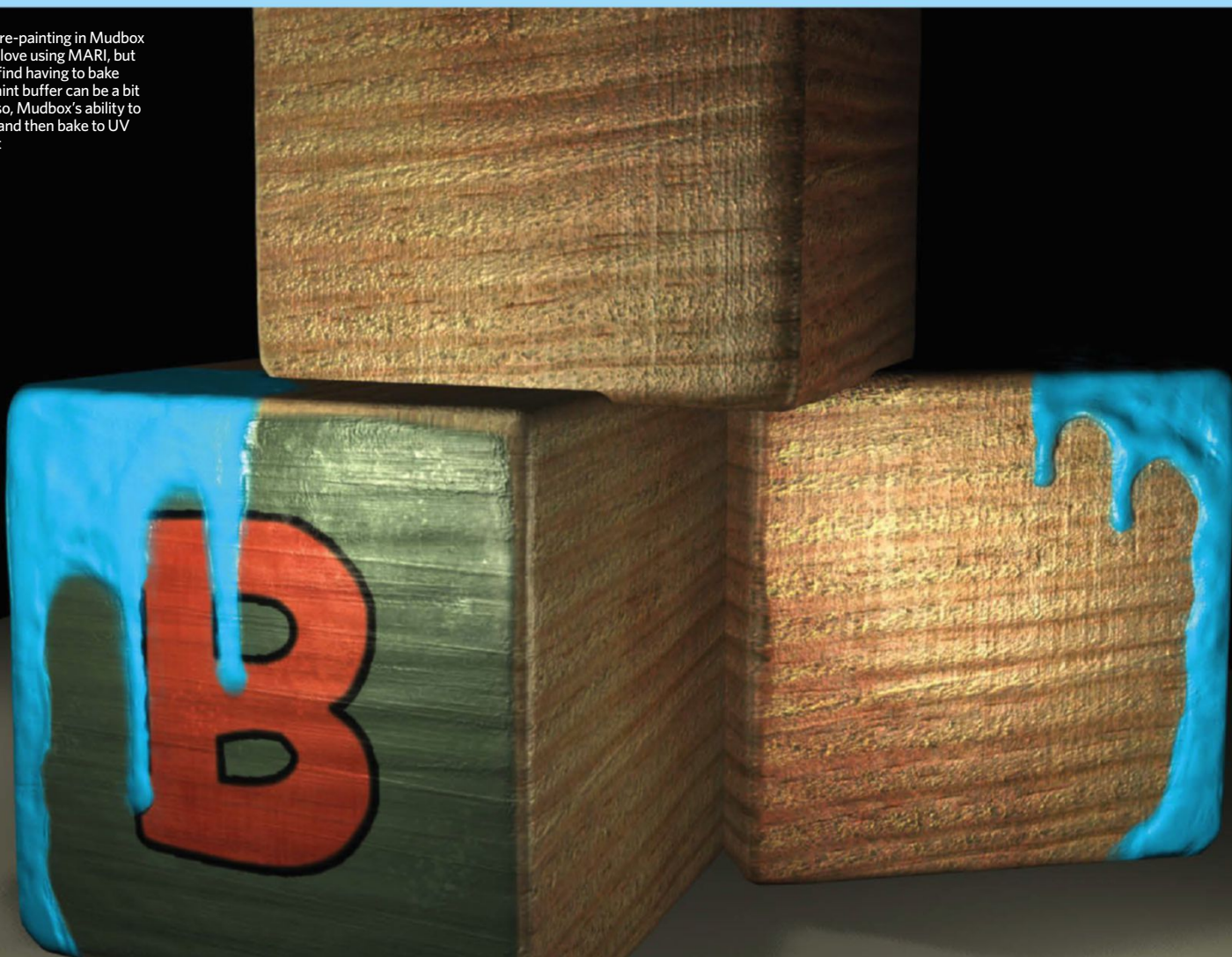
Interviews



Industry

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For me, texture-painting in Mudbox is a joy. I also love using MARI, but sometimes I find having to bake down your paint buffer can be a bit annoying. Also, Mudbox's ability to paint in ptex and then bake to UV space is a gift



Autodesk Mudbox 2014

Escape Studios' CG maven Simon Fenton takes a look at the new features in the latest version of Autodesk's toolkit. Should be your first choice when it comes to digital sculpting?

REVIEW BY Simon Fenton, CG specialist at Escape Studios, UK



Mudbox has come in leaps and bounds since its first uses in 2006, and in this latest release it's only become more powerful.

While the big guns have been saved for the geometry side of things, there have also been numerous small additions to Mudbox's fantastic texture-painting tools, which enable a much smoother workflow.

I tested these new tools on scenes that I often use for teaching and found that even the most simple of features have really increased productivity across the board. For instance, it may be a small thing but flooding a paint layer is now a one-button click, while also being able to delete paint but keep the layer certainly helps matters.

Exporting textures is also a super-simple process now thanks to the Export Channel Merged command, as well as the Duplicate Merge Visible, which enables quick control over which elements of a channel you want as flattened images.

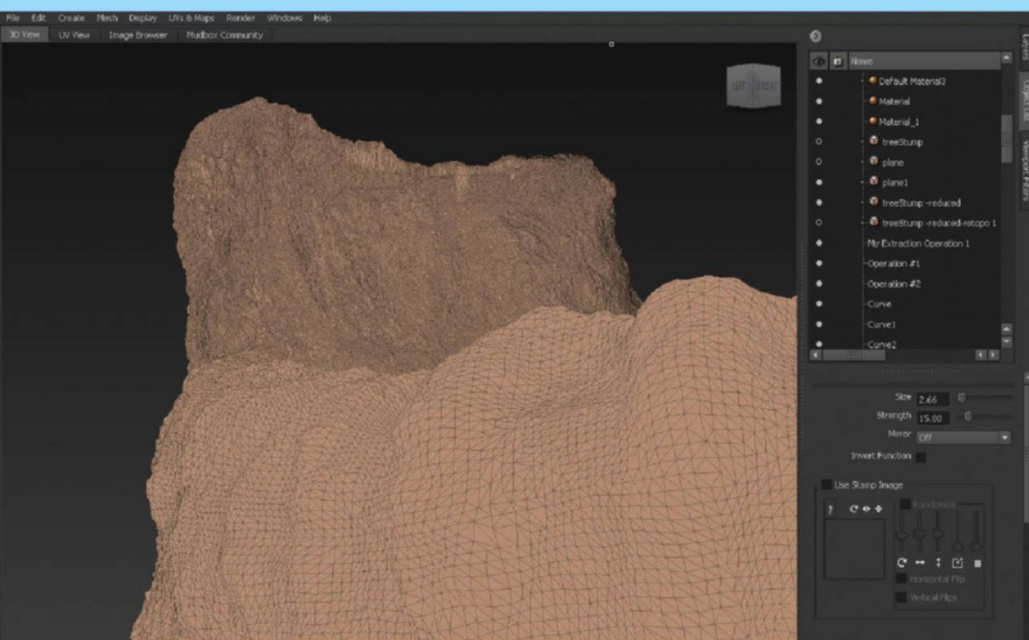
Mudbox can now export 8,000 textures should you need them, while layer functionality is also powerful and easy to use. What I would like to see is the ability to link textures through different channels so that one black-and-white texture can be used for both Bump and Spec maps. The cherry on the cake would have been the addition of procedural textures and adjustment layers.

However, the new remeshing tools are really the big new back-of-the-box feature.

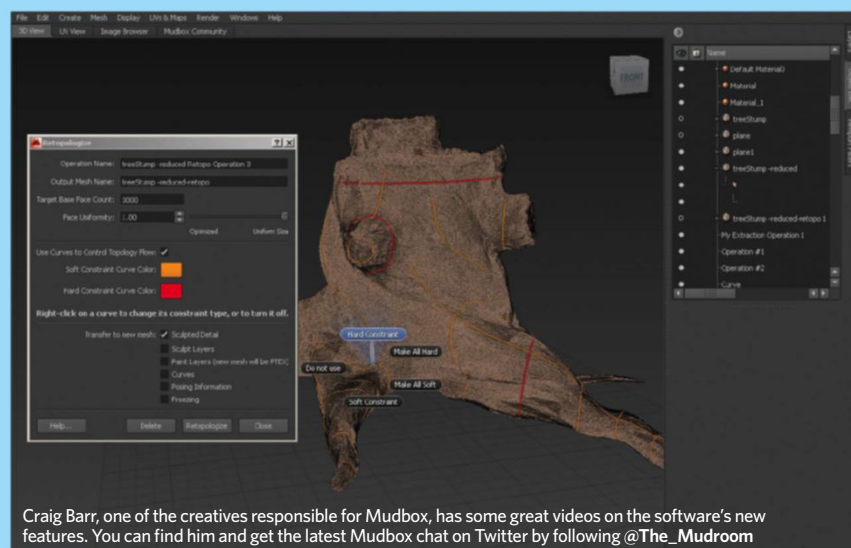
Typically any model adjustments would have been done in Maya and sent back to Mudbox, but now you can change geometry, edge flow and poly counts all with the click of a button, without even leaving Mudbox.

To review such tools I used a six-million-poly sculpt of a tree trunk, which I use as part of my Mudbox course at Escape Studios. I first used the Mesh Reduction feature, which decimates a high-resolution mesh and creates a lower-resolution copy, while keeping the volume and shape intact. This was very quick and gave me the control to keep areas of localised detail by using the Freeze tool.

I was really impressed by the polygon decimation and I can see it working well with scan data; certainly in conjunction with the



Loading a model containing millions of polygons into Maya 2014 can be a painful process



Craig Barr, one of the creatives responsible for Mudbox, has some great videos on the software's new features. You can find him and get the latest Mudbox chat on Twitter by following @The_Mudroom

ability to highlight mesh errors and fix them using the new Patch Tighten and Fairing tools to smooth things out.

I took the decimated version of my sculpt and used the remeshing tools on automatic settings, which produced a good result. I could see myself using these for environments and quick fixes, but I wanted to put the curve-guided remeshing through its paces for a more complete result.

Using the Curves tools I drew curve guides to influence the retopology process. The Curve Loop tool made creating curves on this model very easy. I drew straight lines across a model and let Mudbox figure it out for me. Using the manual Curve tool enabled me to suggest a flow, which was quick and intuitive.

Once I had drawn my curve guides on the decimated model, I could then use the new Retopologise function. Specifying rules to control edge flow is now very simple. I made

some of the curves red to act as hard constraints, which indicate important edges, and I left the rest of the curves orange. Orange curves act as soft constraints, which help define the basic edge direction after the hard constraints. I was really impressed with the results, plus I could specify a target poly count as well as transfer sculpted detail, layers and painted information.

It's important to note that most retopology tools are never 100 per cent perfect and there is always a little tweaking needed, but this feature cuts out hours of manual labour.

Overall I think Mudbox is a fantastic tool and the 2014 release is a great update that should really help productivity. However, the service packs cost a lot. As a side note, it's worth mentioning that Pixologic has just released a new version of ZBrush free to all existing customers and its new auto-retopology tool, ZRemesher, is stunning.

Essential info

Price: £700 / \$795 US
(excluding VAT)

www.autodesk.com

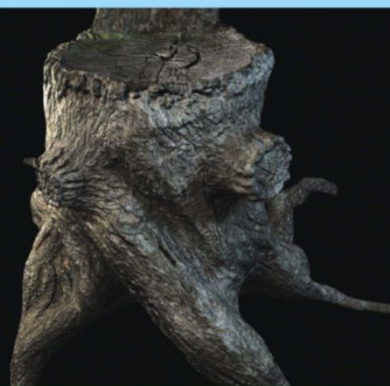
OPERATING SYSTEMS

- Windows 7 or 8 Professional edition
- Mac OS X 10.7 or 10.8
- Red Hat Enterprise Linux 6.2 W S, or Fedora

OPTIMAL SYSTEM REQUIREMENTS

- 64-bit Intel or AMD multicore processor
- 4GB RAM (8GB recommended)
- 1GB free hard drive space for installation
- Three-button mouse

To create the sculpt details in this model, I converted the bark texture to black-and-white, then applied the Sculpt tool using the Maps function. This made accurate displacement to match the texture



The good & the bad

- ✓ Great for texture-painting
- ✓ Able to paint and sculpt on multiple objects
- ✓ Great for sculpting and detailing meshes
- ✓ Easy to learn and intuitive
- ✓ Works well with Maya
- ✗ Currently can't link textures between channels, like in MARI
- ✗ No DynaMesh equivalent
- ✗ Can't paint and sculpt at the same time
- ✗ No Extrude-type function
- ✗ No ZSphere-type function

Our verdict

Features 8/10
Ease of use 9/10
Quality of results 9/10
Value for money 8/10

“A worthwhile update to this ever-improving sculpting toolkit, but one that remains in the shadow of ZBrush”

Final Score **8/10**

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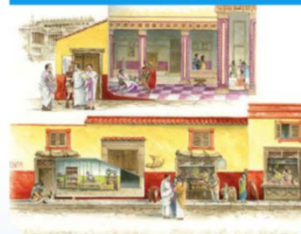
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ZBrush 4R6

We take a look at the latest update to Pixologic's ubiquitous digital sculpting tool

REVIEW BY Filipe Magalhães, 3D artist and creative development instructor at Digital-Tutors



If there are two things you can say regarding Pixologic, it's that its ZBrush updates not only come thick and fast, but that they're also

well-considered and entirely beneficial to the user. This certainly goes for ZBrush 4R6, the latest upgrade to the digital sculpting tool and one of the most robust.

Pixologic has been dropping the mic, so to speak, ever since introducing the DynaMesh system. However, despite its versatility, the problem remained that the topology it gave you generated too many issues the deeper you got into the sculpting process. Its poles emerged in strange positions or the algorithm began to break into increasingly thinner sections, such as toes or hands.

So, let's talk ZRemesher. In essence, Pixologic has completely rewritten the code for QRemesher and replaced it with this new and improved solution. The results that you can achieve are, quite simply, astonishing, both in terms of the speed and the overall quality of the topology flow. Why is it so much better? ZRemesher takes into account the volumes of your sculpt and adjusts the topology accordingly, which the previous version attempted but always failed to do. ZRemesher also enables users to engage with a near infinite series of adjustments.

It should be stated that for the most part any kind of specific topology will need to use guides, but in conjunction with the new Adaptive feature you should find the result you are looking for, since it enables the

creation of non-square four-sided polygons. When activated, however, the Adaptive feature won't respect your polygon count.

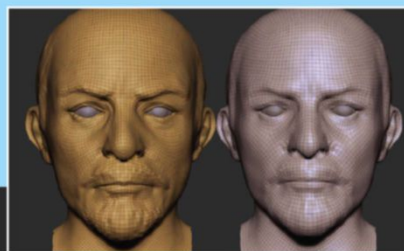
For endeavours such as accessories and multi-piece models, the results are perfect, being animatable and easy to UV and then bake your details.

There are some small drawbacks that will be noticed once you start getting intimately involved with the software, however. For all of its excellent improvements, ZBrush does still exhibit familiar problems, such as adding weird polygons where you don't necessarily want them.

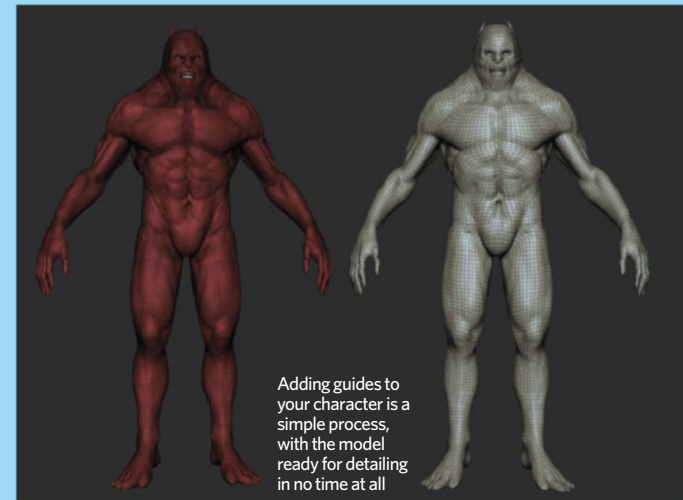
Nevertheless, for existing users of ZBrush, 4R6 is once again a free upgrade and, along with the back-of-the-box features, it comes with a whole bunch of new brushes, settings and subtle yet nevertheless significant improvements; my favourite being that DynaMesh now retains your PolyGroups.

It's the wealth of small adjustments that sit alongside the sweeping changes that make ZBrush 4R6 such an exciting toolkit. These are exciting times to be working with digital sculpting. Upgrade to R6 as soon as you can. It really is amazing.

On the left you can see a lot of guides and projection were used. On the right is the raw ZRemesher result



Here you can see some cloth and facial topology tests completed using ZRemesher



Essential info

Price: £587 / \$844 US / Free to existing users*

www.pixologic.com

OPERATING SYSTEMS

- Windows / Mac

OPTIMAL SYSTEM REQUIREMENTS

- CPU: Pentium D or newer (or equivalent such as AMD Athlon 64 X2 or newer) with optional multithreading or hyperthreading capabilities / Intel Macintosh
- RAM: 2,048MB required for working with multi-million-polys. 6GB recommended. (ZBrush 4 is a 32-bit application, but can use up to 4GB of system RAM)
- HDD: 16GB of hard drive free space for the scratch disk

The good & the bad

- ✓ ZRemesher is amazing
- ✓ Features DynaMesh PolyGroup retention
- ✓ New Trim brushes

- ✗ ZBrush 4R6 is still not a 64-bit release

Our verdict

Features	10/10
Ease of use	9/10
Quality of results	10/10
Value for money	9/10

“An absolute game-changer and a massive time-saver for existing users. Upgrade now”

Final Score **9**/10

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“This is our graduation film. We didn't think we'd be able to be selected for SIGGRAPH 2013”

The 'À La Française' team bring the courtiers of Versailles to life in their satirical animation. Page 106



Poster from 'À La Française'

Supinfocom Arles

The student team behind 'À La Française' discuss their award-winning short

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The new ZRemesher function is a very welcome addition to the ZBrush arsenal. You can read more about it in this issue's review, over on page 97



ZBrush 4R6 launched

The latest release features the new and exciting one-button retopology system, ZRemesher

Pixologic has released the latest version of ZBrush, which is free to all registered users on Windows and Mac.

Central to the upgrade is its new evolution in automatic retopology, ZRemesher. The system analyses the curves in a mesh to produce a natural polygon flow, taking sculptural elements into consideration. However, for more customisable results users can draw control curves on their model to influence polygon flow and edge loops. ZRemesher will also be able to perform local retopology to part of a mesh while keeping a natural connection to the rest of the model.

Core features in ZBrush 4R6

- ZRemesher automatic retopology tool
- Trim Curve brushes to trim a model and close resulting holes with new geometry – great for use with DynaMesh
- Curve Bridge brush can be used to add a polygon bridge to geometry
- Crease brush for defining where an edge crease will be applied with a curve
- Brush Radius option extended for the Trim and Slice brushes, to create a thin path of topology or even surface thickness

Computing times have also been drastically improved, with Pixologic saying the tool will be able to convert a 200,000-polygon DynaMesh to a 10,000-poly retopologised model in a matter of seconds.

Other additions to the ZBrush 4R6 toolset are new brushes, such as the Trim Curve brushes, which delete all the geometry outside of a Trim Curve line and close the resulting hole, replacing it with new geometry. The Curve Bridge brush has also been added to create a polygon bridge between surface holes, Polygroups borders or creased edges. The new Crease brush enables a freely drawn curve to define where an edge crease will be applied to the model.



ZRemesher provides a Freeze Border option so that the openings of a polygon structure will be kept exact while retopologising everything else. This is useful for models with multiple parts and edges that need to line up. Model courtesy of Jason Martin

Rhythm & Hues and ILM at BFX

These world-class studios will be two of many speaking at the Bournemouth festival's industry talks

The BFX Festival has confirmed that industry experts from both Rhythm and Hues and Industrial Light and Magic will be speaking at talks during the event. The two studio talks have been added to the BFX Festival programme, which also includes movie screenings of VFX films such as *Iron Man 3*, *Life of Pi* and *Despicable Me 2*, followed by a Q&A with the industry experts who worked on the films. Professionals will also be leading workshops during the festival, while software companies such as Autodesk, Next Limit and Adobe will be demonstrating new technology.

The talk from Rhythm and Hues will be given by Hans Rijpkema, who began working at the studio in 1996 to set up the Character Rigging department. He has since worked on over 40 feature films including *Harry Potter and the Philosopher's Stone*, *Elf*, *The Lion, the Witch and the Wardrobe* and *Life of Pi*. He was also a speaker at Animex this year, where he presented 'Taming Tigers and Ocean Waves', describing how the Oscar-winning visual effects of *Life of Pi* were created from a water tank in a Taiwanese airport. He also discussed the digital ocean environments and creatures in the film, which sparked controversy during the Academy Awards earlier this year.



The festival, coming this September, is being organised by The International VFX Hub, a collaboration between the National Centre for Computer Animation at Bournemouth University and the neighbouring Arts University Bournemouth

New Escape VFX course

Online training for aspiring artists around the world

Escape Studios has set out to package its pro VFX training into one of its most comprehensive online courses yet.

The course covers the latest and most relevant industry techniques and software packages, enabling students to be at the cutting edge of CG production. Students are set weekly projects and get feedback from the Escape tutors on each, so they can fine-tune every skill.

To develop the course, Escape has worked alongside leading industry figures, graduates and their professional tutors, so as well as using the latest industry-standard software, the course also concentrates on the key skills sought by recruiters in the VFX industry – ultimately helping students to secure their first roles as VFX artists.



During the Taster course you get to create a fun VFX shot of a roller coaster in the London Underground

Escape has also developed a Taster course that offers a hands-on trial of the new online 3D course. The two-week taster introduces the process of integrating CG elements with live-action footage and includes a number of key areas such as modelling, texturing, lighting and rendering. You can learn more at www.escapestudios.com/two-week-vfx-online-taster/

Pixar cuts back sequels

Ed Catmull says studio plans to create more original films



Pixar has most recently released *Monsters University*, the prequel to *Monsters Inc.* The studio's next film, *The Good Dinosaur*, is an original creation set in a world where dinosaurs never became extinct

Pixar president, Ed Catmull, claims that a new strategy for the studio aims to create one original film per year. "Every once in a while, we get a film where we or the audience wants to see something continuing in that world — which is the rationale behind the sequel... But if you keep doing that, then you aren't doing original films," he explained. The studio's new films include *The Good Dinosaur* for 2014, as well as the sequel *Finding Dory* and original animation *Inside Out*. "For artistic reasons, it's really very important that we do an original film a year," says Catmull, who also plans to get Pixar out of its recent slump in the animation market.

Windows 8 set to support 3D printing

Microsoft aims to make creating a 3D object as easy as printing a Word document

The soon-to-arrive Windows 8.1 update will include full plug-and-play support for 3D-printing file formats. This will enable a "direct pipeline" from 3D printing application to 3D printers, according to Rob Roberts, product manager at Autodesk's Consumer Group. Microsoft has also released a technical video detailing the new 3D-printing APIs. "It's going to unlock huge potential for people all over the world," says Microsoft general manager Shanen Boettcher. "It would be great to see virtual potter's wheels, or even block-builder apps." You can see the full video explanation via Channel 9 at: <http://tinyurl.com/Win3DA>.



The addition of a 3D printing pipeline to Windows 8.1 means an object file could be emailed to a recipient, who could then simply open the file and hit print

Software shorts

Bringing you the lowdown on product updates and launches

RayFire 1.62 plug-in for 3ds Max



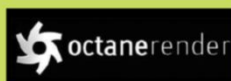
RayFire Studios has released RayFire 1.62, the latest version of Mir Vadim's plug-in that offers the ability to fragment and destroy in 3ds Max. The release provides two major features, the Voxels modifier to create voxels using geometry volume and a Clusters modifier to easily combine groups of single fragments to produce complex clustered fragments. The plug-in is free for customers of RayFire 1.59, 1.60 and 1.61. Learn more at www.rayfirestudios.com/rayfire-162.

Qube! 6.5

PipelineFX has announced Qube! 6.5, a new version of its leading render farm management software. New features include cost-reporting and user-definable job tags, providing a detailed insight into farm usage rates across multiple shows and clients. It costs \$2 to rent Qube! for one day. You can find out more about the new version by visiting www.tinyurl.com/Pipe3DA.



OctaneRender standalone 1.20



OTOY has shipped the new standalone version of its GPU-based renderer with the ability to render 3D in real-time, OctaneRender. A multitude of new enhancements have been added, including multi-threaded scene-compiling and improved rendering performance. Licensed customers can download the new release for free on the software's official website. Discover all the features online via www.render.otoy.com/newsblog/?p=256.

FLIX joins The Foundry

Previously developed in-house at Sony Pictures Imageworks, FLIX has now joined The Foundry's growing software range, with the studio taking over commercial development to bring the production tool to the public. The web-based, collaborative, storyboarding tool enables creative teams to work together in an easily accessible area to perfect ideas during the development of a project's visual story and concept. FLIX is not yet available to buy, but those interested can contact The Foundry to find out more and register interest in the tool.



FLIX can take teams from a storyboard through to layout, colour keys and lighting to create a full pre-vis edit of the film

Studio Access

Sunset Overdrive E3 trailer

Production studio Psyop discusses its action-packed trailer for this new open-world shooter



Founded in New York in 2000, Psyop is a commercial production company that believes in taking a unique and tailored approach to every project. The studio is skilled in animation, design, illustration, 3D, 2D and live-action production, as well as combining some or all of these.

www.psyop.tv

Project *Sunset Overdrive* trailer
Description This action-packed trailer, created by Psyop and Microsoft for Insomniac Games and Xbox, transports you into a radical, constantly changing, open-world where you'll use your hyper agility and cache of crazy weapons to take back a city overrun by mutants.

Country USA

Software used Maya, V-Ray, Houdini, NUKE, Flame

Contributors



David Chontos
Creative director

Dan Vislocky
Animation director

Sean Kealey
Lead character TD

Psyop was born in New York's East Village in 2000, a time of huge technical innovation in the world of CG art. Founders Todd Mueller, Kylie Matulic, Marie Hyon, Marco Spier and Eben Mears pooled their money to convert a dive bar into a digital production studio with just a few workstations. They aimed to master every new tool they could.

Psyop has since become renowned for its commercial production work and has further expanded into a Los Angeles office in 2008, but is still using software in new and unexpected ways. It consistently integrates and combines 2D and 3D with animation, design, illustration, visual effects and live action. With Psyop's projects collectively gaining over 100 million views on YouTube and reaching audiences in over 200 countries, the studio's range and mixture of techniques has certainly been successful.

"Our distinction, I believe, lies in our open and collaborative creative process and by actively engaging the creative and technical geniuses we employ," says Psyop creative director David Chontos, who worked as CG supervisor and art director on the *Fable III* Xbox spot that Psyop created in 2010. For Chontos, the *Fable III* game trailer represents the perfect blend of concept and content – his favourite project since he first began working as a texture and lighting artist for Psyop's 'Happiness Factory' Coca-Cola ad in 2006. "From the detailed characters, subtle fantasy tone, time period-influenced costume design and dramatic lighting, to the colour found in the masterpieces we referenced, it really had it all for me," Chontos remembers. "It was one of the best CG teams I've ever had the pleasure of working with."

The latest gaming project for the company was for the production of another Xbox trailer, this time for the new Xbox One game *Sunset Overdrive*, with Microsoft and Insomniac Games. First previewed at E3, the dynamic, fast-paced trailer marks the second successful collaboration between Psyop and Microsoft. Following the amazing past experience



working on the *Fable III* game trailer, it is no surprise that the team at Psyop were very excited about undertaking the new *Sunset Overdrive* work.

"Game industry insiders seem to be more comfortable with the animation process and tend to understand very CG-specific language and production workflows," Chontos continues. He explains that while creating a trailer for a game is more similar to making advertising for conventional products than developing an actual videogame, the types of people the team work with are much more technically inclined and understanding of the production pipeline involved in producing a CG spot. The *Sunset Overdrive* trailer project was no exception from the start. "We pitched it like we would any other job and actually received a full pre-vis with the initial brief, something that's considerably rare," Chontos explains.

Creating a trailer for a game that had not yet been finished presented a research and development

“My personal philosophy: do whatever makes you feel awesome”

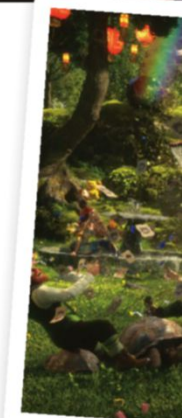
David Chontos, creative director for the *Sunset Overdrive* trailer

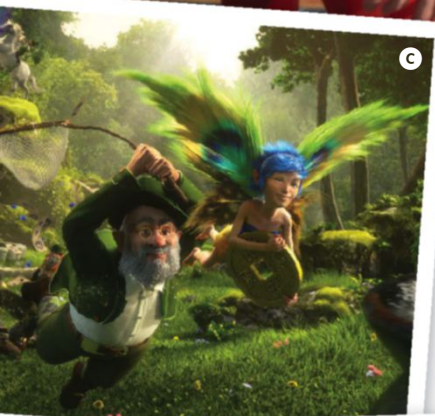
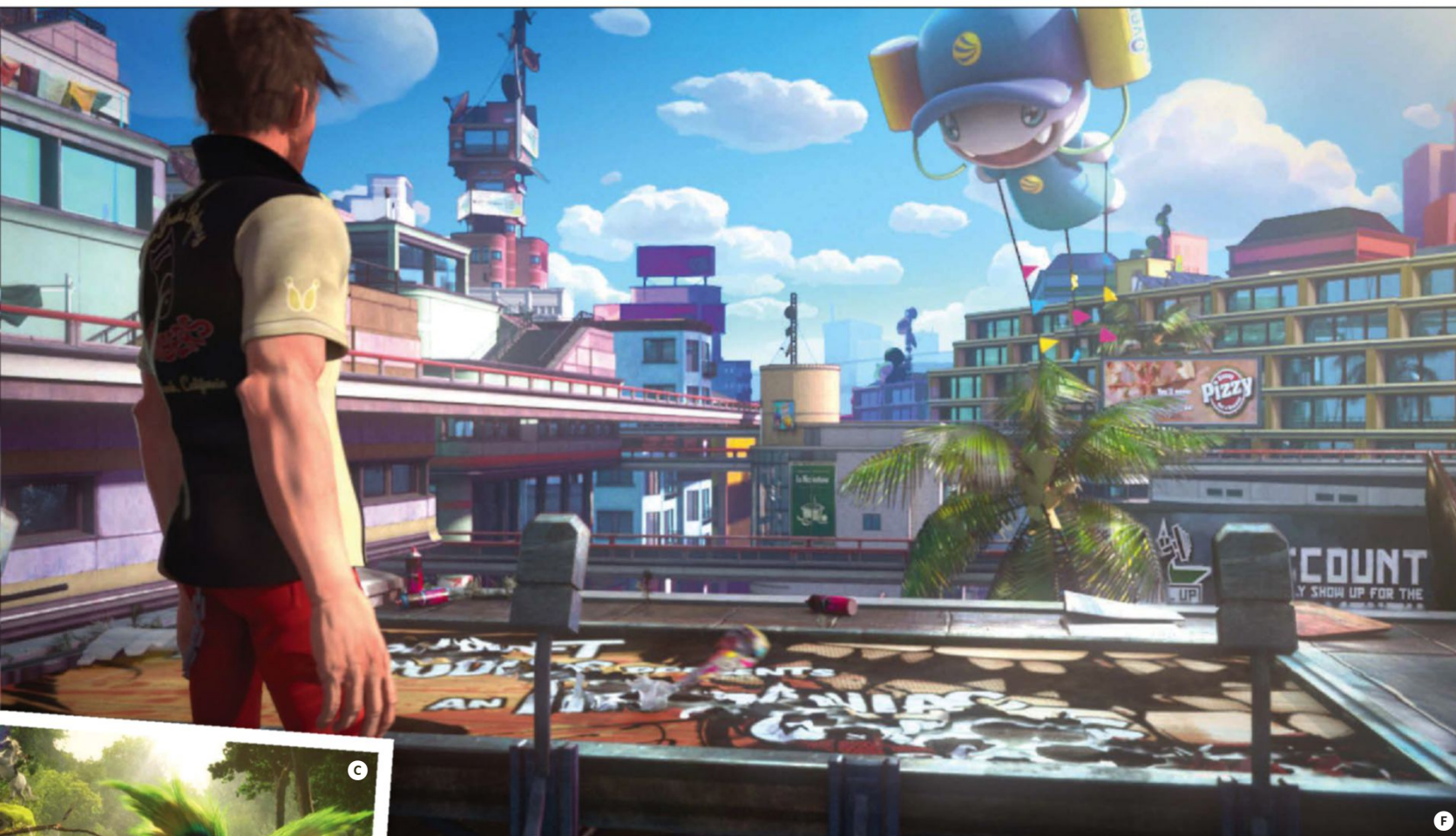
portfolio highlights

Here are some of the other projects that Psyop has worked on:

- 2013 California Lottery – More Luck for your Buck
- 2013 Legacy / Butler Bros – Rethink Butts
- 2012 Planters / Men's Health – The Team
- 2011 Nesquik – Legendary Quest
- 2010 Xbox Fable III – Revolution
- 2010 Kool-Aid Fun Fizz
- 2008 AT&T / Olympics – Butterflies
- 2006-2009 Coca-Cola Happiness Factory

A Viewers of the trailer are shown a day in the life of a mutant slayer avatar as he rushes and climbs through the city. We're also given a brief glimpse of other characters and their eccentric weapons





The best tool wins

Creative director for the Sunset Overdrive trailer, David Chontos, explains which tools Psyop uses

The production team at Psyop stay true to the founders' initial aim of mastering every new tool they can when choosing their software for each project. The same goes for *Sunset Overdrive*. David Chontos tells us that to produce the trailer the team simply chose whatever tools were best for each job, selecting them out of the studio's range of options. "We currently support Maya, XSI, Houdini and 3ds Max, so we pretty much have it all covered," he says. "The same goes with rendering: whatever renderer is best equipped to deal with the unique challenges of each job wins." The studio ultimately selected Maya, V-Ray, Houdini, NUKE and Flame to create the trailer.

challenge. Psyop needed to work closely with Microsoft and Insomniac Games to create the initial concept designs for the project. The trailer for *Sunset Overdrive*, an open-world shooter where viewers spend a day in the life of a zombie slayer, had to demonstrate the game's super-stylised aesthetics as well as give

viewers a taste of the game's outlandish weapons and unpredictable environments. "Since the game was still in development, we worked alongside the art directors at Microsoft and Insomniac to secure a look that was a reasonable prediction of the final render quality of the game," says Chontos. He explains that the Psyop team were provided with concept art and some in-game renders to help create the dynamic, rich look for the trailer. "The vibrancy was reinforced at every level, from hand-painting textures with a brushstroke quality, to boosting saturation and enhancing colour variation overall in composite."

This energetic, colourful aesthetic also had to shine through the trailer's animation, showcasing the kind of boundless energy that would be required to take on a mutant zombie uprising, but all in a very fast-paced and entertaining way. "There is so much action across a lot of short shots in this trailer, so maintaining the energy level while telling the story was crucial," Chontos continues. Psyop created the relentless animated action as the viewer follows an avatar sliding, jumping, climbing and even zip-lining

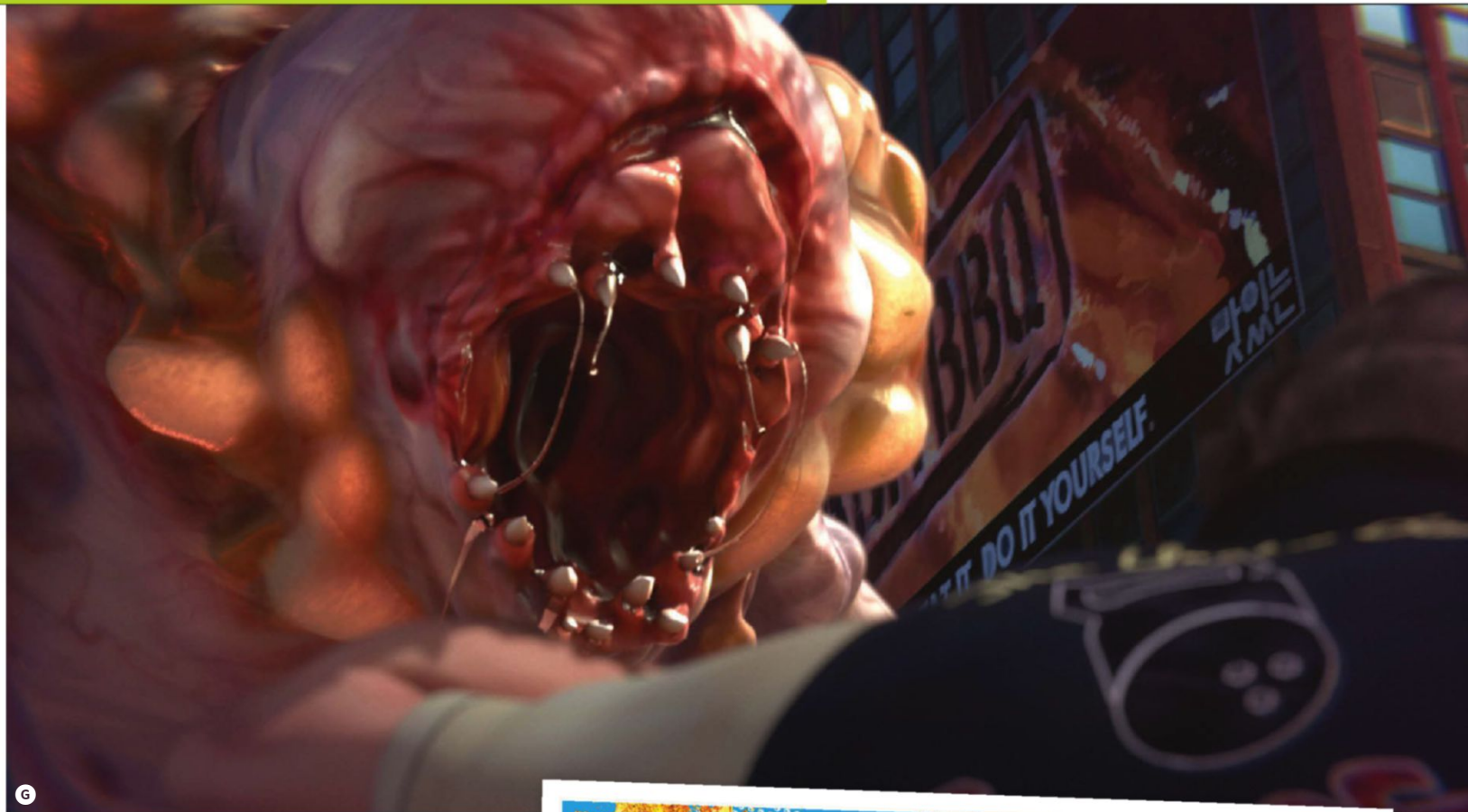
D Psyop partnered with The Butler Bros to develop public service announcements such as the Rethink Butts campaign, which aimed to get people to think differently about their tobacco trash

C Psyop joined forces with David&Goliath to create the 'No Luck for Your Buck' spot for the California Lottery. The ad was packed with over 50 lucky icons inspired by cultures all around the world

D Psyop and Doner collaborated with Skywalker Sound to create this in-theatre promo, 'Ear of the Tornado'. This FX-heavy, 45-second spot involved an impressive 70 million-particle twister

E A still from 'Le Manège', a whimsical spot that Quad's WIZZdesign partnered with Psyop to create for McDonald's French market. Psyop designed the four worlds and 35 characters in this spot in only three weeks

F "The goal was to create an energetic and irreverent trailer that would showcase the unique attitude, gameplay and design of a next-gen title," says Psyop creative director, David Chontos



through the rooftops of a stylised downtown city. He takes on an ever-increasing hoard of zombies, with a team of others ultimately joining in to help him on the roads of the city along the way. "We utilised motion capture to get the most detailed and human-like performances and paid a lot of attention to the camera and editing," he explains.

All the work for the trailer needed to be completed in time to announce the game at the E3 annual videogame conference, which presented the team at Psyop their greatest challenge and then their greatest reason for celebration, when the studio managed to finish everything on time. "The biggest challenge and success was completing the job within a tight timeframe. From start to finish, we spent eight weeks for almost 90 seconds of content," describes Chontos. "It was a marathon and it required the full attention of an incredibly hard-working and talented team to finish in time for E3."

Despite the tight timeframe involved in completing the project so quickly, Chontos tells us that when working at Psyop, even challenges are a good thing. "I find that our biggest obstacles always give way to elegant and beautiful solutions," he concludes.



“It was a marathon and it required the full attention of an incredibly hard-working and talented team to finish”

David Chontos, creative director for the Sunset Overdrive trailer

G One of the mutants that have overrun the city in *Sunset Overdrive*. Chontos explains how maintaining the energy level in the trailer, while simultaneously staying true to the narrative of the game, was crucial

H Ted Price, CEO of Insomniac Games, has said that although gameplay has not yet been revealed, with the game still in production, the trailer represents Insomniac perfectly in both style and tone

I A still from the announcement trailer for *Wolfenstein: The New Order*™ at 2013's E3. The trailer was created by Psyop and AKQA in collaboration with Machine Games and Bethesda Softworks



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Artist info



RenPeng Dong

Personal portfolio site
www.ldrhyne.cgsociety.org

Country China

Software used

3ds Max, Maya, ZBrush,
Mudbox, Photoshop, V-Ray

“I saw an image on a website that was like a kind of transparent man blending with his background, which brought me this great idea... [I] decided to show the feeling of part drying paint, part real, part plaster”

Non-US readers turn to page 92

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Project Focus 'À La Française'

We talk with the team behind the student film that won Best In Show at SIGGRAPH 2013

à la Française

Project 'À La Française'

Description 'À La Française' is a student animated short directed by Morigane Boyer, Julien Hazebroucq, Ren Hsien Hsu, Emmanuelle Leleu and William Lorton; students from Supinfocom Arles. The film recently won Best in Show at SIGGRAPH's Computer Animation Festival. It is based on the court of Versailles during the reign of King Louis XIV, but with a surprising poultry-based character design twist.

Country France

Website
www.a-la-francaise.tumblr.com

Contributors



Emmanuelle Leleu

Co-director, character design, animation, texture (characters) and sound effects

Ren Hsien Hsu

Co-director, setup/rig/skin, script development, character design, character modelling, animation, cloth

William Lorton

Co-director, storyboard/animatic, character design, animation, FX, sound effects

Morigane Boyer

Co-director, modelling (characters and set) layout, skin/texture (character), cloth

Julien Hazebroucq

Project lead, co-director, team management, set (design/modelling/texturing), lighting, rendering, compositing, sound effects

The initial idea behind student film 'À La Française' was of a rooster fight developing during the reign of Louis XIV. "We wanted the audience to discover the court of Versailles and not just Louis XIV, the king," explains Morigane Boyer, one of the five co-directors who produced the short. The project was developed as a graduation film aiming to give satirical insight into the time period, while also introducing some comical characters and situations. However, the students hardly expected the project to also go on to win Best in Show at SIGGRAPH's Computer Animation festival this year.

The team began their project's preproduction by researching, drawing inspiration from a huge variety of sources such as documentaries that described Versailles court life at the time, as well as paintings from the century for the costume designs, hairstyles, colouring and even the body shapes of their unique characters. "We also watched some Disney films to understand how to make people laugh and organise our sequences," explains co-director and storyboard designer William Lorton. He tells us the team were first inspired to describe the epoch with animals by French poet Jean de la Fontaine, who used the technique in his work.

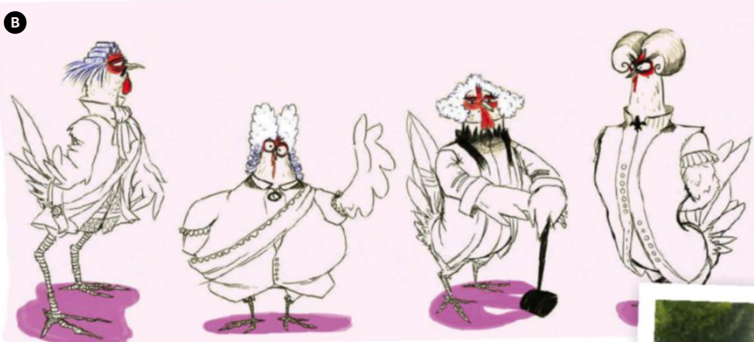
"It was important for us to have a range of different artists on board," continues Ren Hsien Hsu, who co-created the character designs for 'À La Française' with Lorton and Emmanuelle Leleu, the other team members behind the animation for the project. Leleu explains: "Although we had around 40 characters in

“We wanted the audience to recognise each character in a single sight, so we assigned one main colour to every character”

Emmanuelle Leleu, co-director, 'À La Française'

A The directors say the main challenges in producing the short were the integration of the various characters and luxurious architectural details. They had to maintain a harmonious and consistent animation style, all the while creating beautiful scenery

B Emmanuelle Leleu was in charge of the expressions for the project, while William Lorton researched and created the outline and body of the characters. Ren Hsien Hsu then combined all the teams' work together in a final model sheet



the films, we wanted the audience to recognise each character in a single look, so we assigned one main colour to every character." The team developed their own efficient rigging system to animate the large amount of characters in the short: one of the many time-saving efforts that led to completing the award-winning project ahead of schedule.

Creating a coherent look throughout the animation was another challenge for the three animators, who had to constantly communicate with one another

Lighting the short

The team explain how the lighting pipeline for the project evolved during production of the short

Julien Hazebroucq, the co-director who also created the lighting for the project, initially intended to produce a more painterly render – aiming to reproduce the same unsaturated, pale aesthetics as a painting from the time of Louis XIV. However, the final render did not create a visible enough result using this method, particularly with the multitude of different characters in the short. The sets became more colourful and the team ultimately settled on two main ambiances: "One inside of the palace, with different values of grey, white and gold; then one outside, with a very healthy, beautiful green, as well as beige for the buildings," explains Hazebroucq.



about the intentions regarding the acting. This was important in order to create consistent shots despite their varying animation styles. "The hardest thing was to work on the story and not to get lost or wander too far from our original idea," says Julien Hazebrucq, team manager. "One year is long. We learnt to believe in our project and to trust in what we were doing."

"We had so many ideas and created a lot of characters, so we had to make some choices to maintain the main idea of the film. We had a lot of work to do and if we hadn't been a united team it wouldn't have worked," says co-director Boyer, who also specialised

on the layout, modelling, texturing and cloth work for the short. Team manager Hazebrucq also advises future SIGGRAPH hopefuls to be strong, motivated and united when working as a group, as well as to respect deadlines and prioritise a consistent look to the animation. "Don't think about winning SIGGRAPH prizes, do it with all the passion you've got for animation movies," she explains, adding: "Do not hesitate to share your own opinions and skills!"

The group now hopes to continue to create more short films and imaginary worlds, and to keep visiting new countries with their future work.

© "One of the biggest challenges was the number of characters to manage during the production. I mean in the story, the directing, the animation, the modelling, the rendering... it affects all the production steps," explains director William Lorton

© Initially animators Ren Hsien Hsu, William Lorton and Emmanuelle Leleu had different visual styles. They had to keep communicating their approach to each shot to one another in order to make a consistent animated result with the 40 characters

© An extract from the short can be viewed on Vimeo at <https://vimeo.com/45503195>. Director Emmanuelle Leleu explains that teamwork was essential in achieving the quality of the final film. Make sure you check it out!



Industry insider

Hasan Bajramovic

Freelance CG artist

Cover artist Hasan Bajramovic talks us through his incredible character portraits and his career as a successful freelancer

About the insider

Job Freelance CG artist

Location Bosnia and Herzegovina

Education BA (Hons) Arts and Creative Multimedia

Website www.hbajramovic.cgsociety.org

Biography Hasan Bajramovic is a senior freelance CG artist currently living in Bosnia and Herzegovina, where he was raised. Bajramovic has been working professionally for four years since his graduation from a BA (Hons) in Arts and Creative Multimedia, mostly doing freelance work. His 3D character portraits have been featured in magazines, Ballistic Publishing books and CG websites worldwide.

Despite having his CG work now showcased in multitudes of books, magazines and websites, as well as featuring on 3D Artist's cover, Hasan Bajramovic initially intended on studying Law. He tells us it didn't take him long to realise that what he really wanted to do was to learn how the 3D images he had always admired were created. This led to his move to Malaysia in 2004 to pursue a BA in Arts and Creative Multimedia. "I remember browsing the 3D galleries found on the CDs that came with Croatian PC magazines and going crazy about them," Bajramovic remembers. "I was always wondering how these stunning images were created and so began my search and studies. I have to admit that it was really tough for me and that at times I thought just maybe I should have stuck with Law."

Nevertheless, Bajramovic is now a professional freelance CG artist with a portfolio full of awarded creations. He hopes to produce work for a major studio in the near future. "It took a lot of practise to get where I am now and the fight still continues," he tells us.

Could you describe a typical pipeline for one of your character projects?

Every image starts with proper research. I gather as much reference as I can and lay it all down on my desktop. I pick and circle things I really like and after that I block out major forms in ZBrush just to get the sense for proportions. These are the most important stages and if you don't get them right you always end up with problems later on. I'm also never afraid to go back and repeat certain areas, no matter how much time I spent on them. After blocking everything out, I do all the detailing and texturing work.

All of my rendering and shading is done inside 3ds Max with V-Ray. There are no special tricks there, just two or three lights and default render settings. It can take from one to a couple of weeks to finish a sculpt.

Are there any shortcuts to producing your results? Do you have any favourite tools and software that help you produce this complex CG work?

As a matter of fact there are several features in ZBrush that really make my life easier, such as Panel Loops, QRemesher, Topology brush and DynaMesh to name but a few. ZBrush is really a big part of my pipeline and I pretty much do all my work in it. Even though I'm very comfortable with 3ds Max and Maya modelling, I still prefer ZBrush when it comes down to sketching out my ideas. xNormal is also a must-have tool for extracting and baking maps.

Having an account at a site like <http://CGtextures.com> can help out when you're doing texturing on your characters. They are royalty-free and in high resolution, so you can let your creativity go wild. I then have my own library of assets that I've created over time while working on different projects and I use them a lot for base-modelling. The most important thing is to be curious and just experiment.

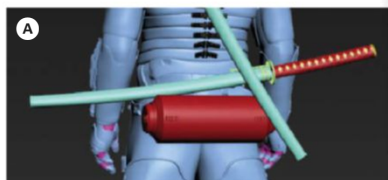
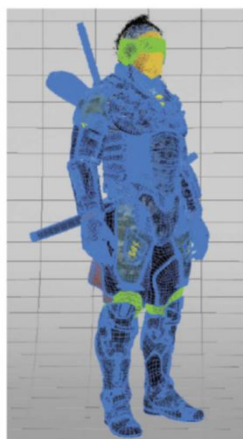
Your works Luciano and Katsumoto look very inspired by classical art. How do you finalise this more-traditional aesthetic in your realistic 3D work?

I try to mimic the colour schemes used in classical art and I always do postproduction work in Photoshop. I use standard Photoshop brushes and tools to add in extra detail and dirt in places where they are needed. There's nothing fancy really, it all comes down to knowing what you want to achieve.

Creating beautiful hair

Bajramovic reveals the tools and plug-ins he uses to create hyperreal CG hair

"For some of my projects I use ZBrush's FiberMesh to create and comb the hair and then export that hair as Curves. This way I can go creative, make many variations and the Curves can then be used with 3ds Max, as well as Hair and Fur. Other methods include using Ornatix, which is a very powerful hair and fur plug-in for 3ds Max. Making things like cornrows and plaits is only a few clicks away with this plug-in and great integration with V-Ray makes it my weapon of choice."



portfolio highlights

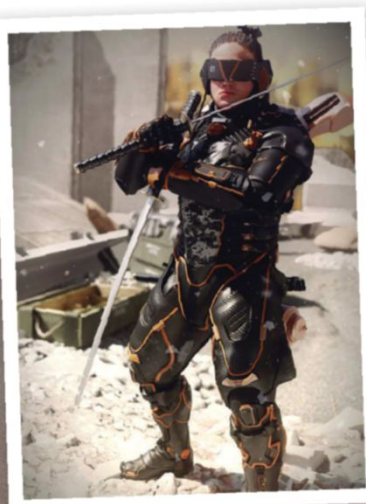
Some recent features that Hasan Bajramovic has worked on:

2013 Atlant Moscow

2013 Daiichi, character design

2012 Luciano, portrait

2012 Katsumoto, portrait



All images © Hasan Bajramovic



You've now been working as a professional freelance artist for four years. Can you describe the advantages and challenges of working freelance?

The biggest challenge with freelance work can be the communication with the client. While the brighter side of freelance is that you get the chance to work from the comfort of your home, it can get a bit hectic with all the work on your back, so you need to stay organised. I like to plan things out as soon as I get a job and I put all of the things that I need to do on paper. From time to time I will get a creative block and there is really no point fighting it. If I'm stuck or I can't find a solution for something, I will sleep on it and usually the solution will present itself the next day.

“I enjoy making characters both hyperrealistic and stylised. I love detailing these characters and I think that's one of the things I'm really good at”

A “Everything about 3D graphics just makes me nuts. It's insane how artists all around the world push their limits and raise the bar with each new project,” says Bajramovic

B Here you can see Bajramovic's image, *Katsumoto*, as a work in progress. This was made using 3ds Max and ZBrush in early 2012 to global acclaim from his peers

C “I think I first gained widespread recognition with my *Katsumoto* portrait. That was actually my first personal work after a very long time,” Bajramovic explains

D The *Luciano* portrait was inspired by Renaissance artist Hans Holbein. Modelling and texturing was done in ZBrush, mainly its QRemesher and FiberMesh options

E “At the beginning you will get one email a month if you're lucky, then as your portfolio grows you keep getting more job requests,” Bajramovic tells us of his early career

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Course Focus

Animation Program: Animation Institute

Join Oscar-nominated students at one of the most renowned film schools in the world

FILMAKADEMIE BADEN-WÜRTTEMBERG

Course name

The Animation Degree Course Program at the Institute of Animation, Visual Effects and Digital Postproduction

Course length 4.5 years

Fees All courses at the Filmakademie Baden-Wuerttemberg are tuition-free as it is a publicly funded school

Student requirements

A high school diploma, proof of practical experience in the film and media industry provided by production firms, TV broadcasters, film distributors or media enterprises.

Applications must be submitted by the 15 February for courses that will be beginning the following October.

Website

www.filmakademie.de/en/main-page



The tutor

Creating trailers for the FMX conference and the International Festival for Animated Film

The Filmakademie's Institute of Animation, Visual Effects and Digital Postproduction organises the FMX conference, which drew in a total of 3,300 attendees every day when it took place in early May this year. It's also a partner of the International Festival for Animated Film, ITFS. Students at the Institute have the opportunity to visit FMX and ITFS for networking and work experience.

Student projects from Filmakademie Baden-Wuerttemberg have received such high-profile attention as an Oscar nomination for 'Das Rad Rocks' for Best Animated Short Film, and awards at the Student Academy Awards with the films 'Rochade' and 'Nimmermeer/Nevermore'. Students from the school also recently won the SIGGRAPH 2013 Computer Animation Festival's Best Student Project award with the hilarious 'Rollin' Safari'. It's easy to see that the school's reputation speaks for itself.

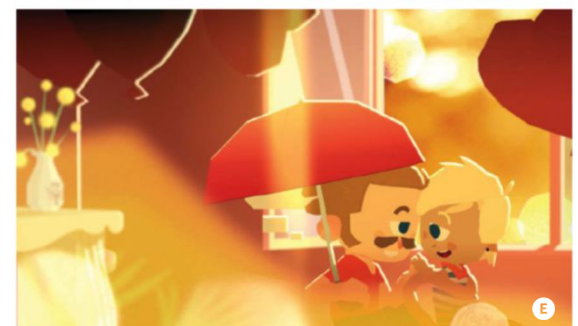
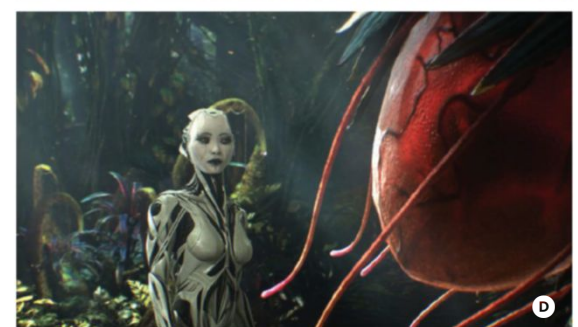
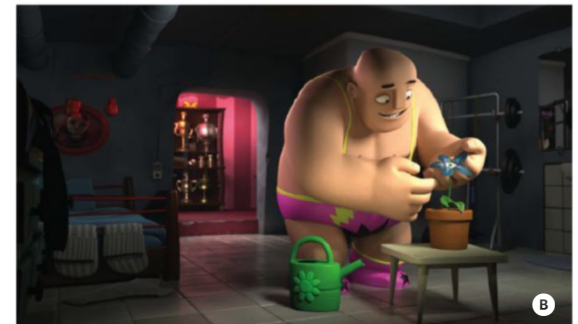
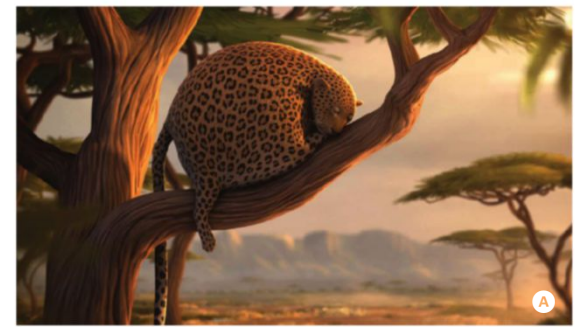
The degree course program at the renowned film school's Institute of Animation, Visual Effects and Digital Postproduction takes four-and-a-half years to complete. Applicants can apply to the tuition-free Filmakademie up to three times but are required to prove that they have practical experience in the industry before they will be accepted.

The project-based focus of the course enables students to major in animation-related topics such as Concept & Art, Animation & Effects and Animation & Effects Producing; or in Interactive Media as transmedia/games directors, artists, or producers.

The curriculum provides training on idea-generation; concept and design; the production of animated short films and VFX sequences for games; advertising and documentary-style films; as well as the study of real-time animation, cartoon animation and stop motion. The school also provides a wide variety of the main 2D, 3D, compositing, rendering and games-development software, as well as an OptiTrack Motion Capture system. You can find out more about the course at the official website for the Institute of Animation at www.animationsinstitut.de.

“Our objective is to enable students to practise working with the equipment they will be using in professional life”

Thomas Haegle, director of the Institute of Animation, Visual Effects and Digital Postproduction



A Rollin' Safari

» Kyra Buschor, Annie Habermehl, Constantin Paeplov

A still from 'Rollin' Safari' that won Best Student Project at the SIGGRAPH Computer Animation Festival 2013

B Harald

» Moritz Schneider
Another film still from the student short 'Harald', which was awarded Best Student Project Runner-up at the SIGGRAPH Computer Animation Festival 2013

C Loom

» Jan Bitzer, Ilija Brunck, Csaba Letay

A still from 'Loom' (2010), a short film by Filmakademie students, which tells the story of a CG spider's successful catch

D Natalis

» Daniel Brkovic, Jan-Marcel Kuehn

A still from 'Natalis', which won a VES award in February and was even showcased at the Daytime Selects Theatre at SIGGRAPH

E Orphelia:

Love&Privacy_Settings

» Bin-Han To

A still from 'Orphelia: Love&Privacy_Settings', which was directed by Animation Studies student Bin-Han To and also shown at SIGGRAPH



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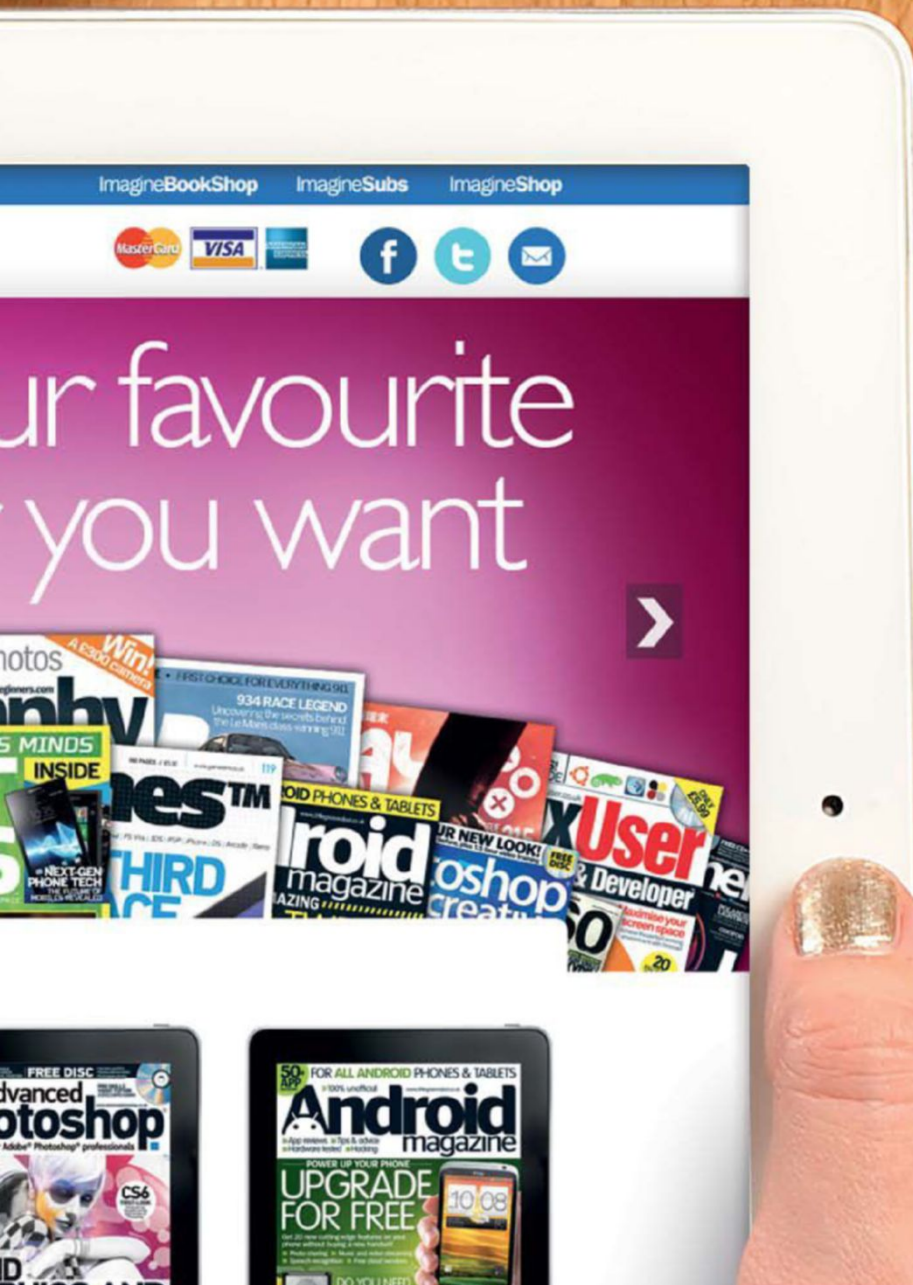
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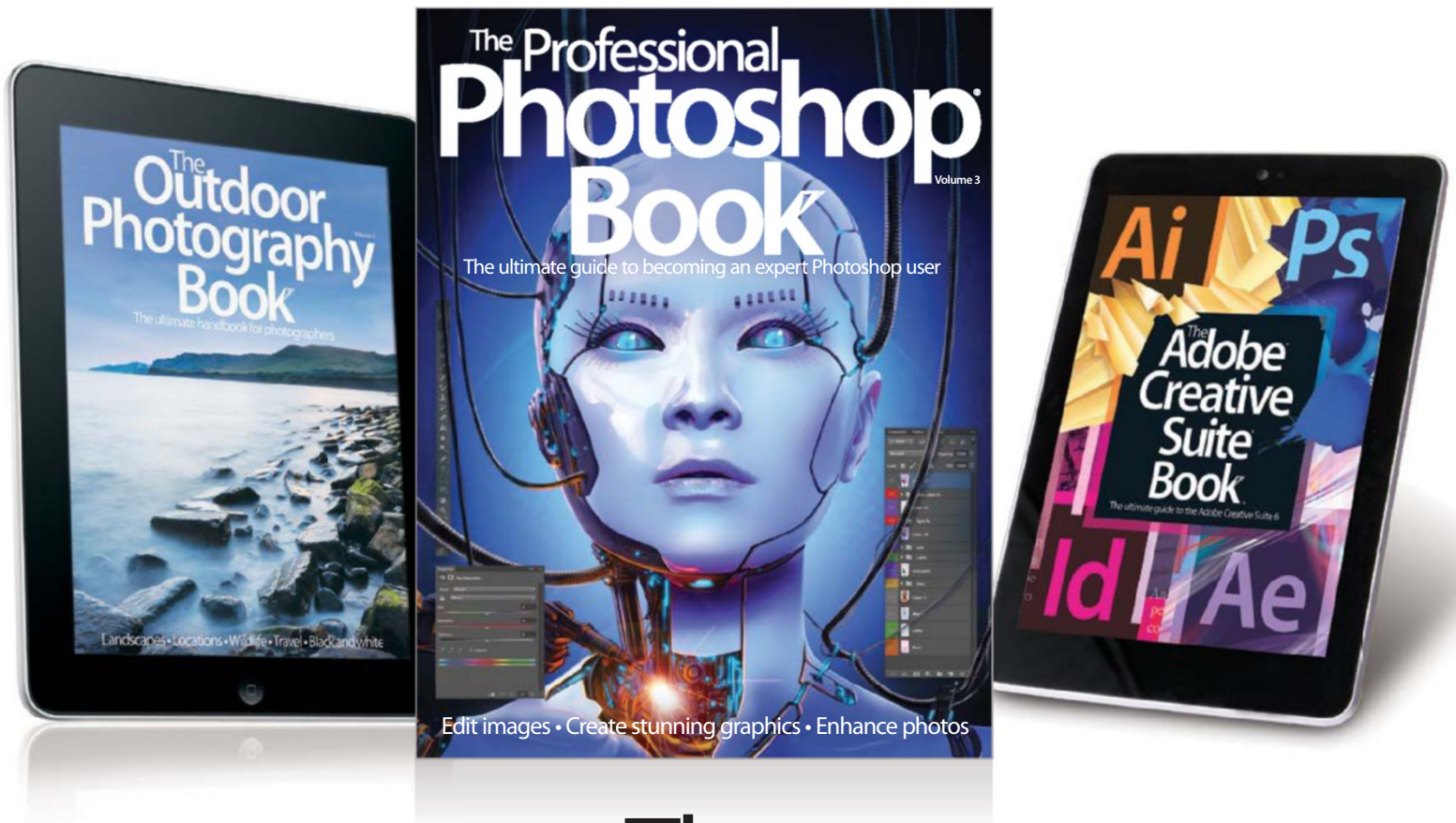
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